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**Allied Paper, Inc./Portage Creek/
Kalamazoo River Superfund Site
Kalamazoo, Michigan**

**Final Technical Memorandum 14
Biota Investigation**

**Appendix I
Data Quality Review Reports
Turtle Tissue Analytical Results**

January 2002

*Technical
Memorandum*

10/13/97

Start-up meeting @ 4:30 pm w/ Ron French (COM) and oversight personnel Nicole Adaniya for week of 10/13. R. French relays MDEQ amendment to SWW requesting that we retain the largest carp and bass captured at each location and submit these fish with sample for analysis.

10/14/97

Crew: KDS, RTF, PMW Oversight: N. Adaniya cloudy, cool mid 50's
Electrofishing (boat) at N. Richmond (ABSA #11) some rain/light sprinkles

Put in River at 9:30 am and fish till 12:45.

Capture 6 carp 18-22" and 3 carp > 23", one A. Bass and 3 J. Bass.

All fish taken upstream of 58th St. Bridge. Carp taken in close proximity to launch. J. Bass along N.d.s shore from bridge upstream to midpoint between Bridge and Ramp. Carp are relatively abundant throughout, sm bass present in v. low numbers and v. difficult to locate. Lm bass v. abundant here both adults and juveniles.

Oversight broke shear pin in rental engine and has no spare pin. RTF goes to get replacement parts and we continue to fish with 2-man crew, towing oversight along to sampling locations. Electrofish 1:30-3:00 w/ 2 man crew (KDS, PMW) focusing on N shore approx .5 mi downstream of ramp capture 2 > 23" carp and one large carp for MDEQ. RTF returns at 3:00 and we repair oversight boat.

3:30-6:30 continue electrofishing w/ 3-man crew. Fish N.d.s shore from 1st bend in river below 58th St Bridge up to RR track/N. Richmond River bend. Capture 2 A. bass and 4 J. Bass.

Total For Day 12 carp, 3 A. Bass, 7 J. Bass. All fish captured w/ electrofishing boat. Many Steelhead in river, some salmon (Kings), also many Lm Bass throughout, but especially in backwaters.

10/15/97

Crew: KDS, RTF, PMW Oversight: N. Adaniya partly cloudy, low 50's
Electrofishing at Morrow Pond in AM (ABSA #2)

Put in at 8:45^{am} and fish till 12:00 noon.

Fish N shore in area upstream of ramp (E. Comstock ramp closest to Dam) approx 300 yds and capture one A. Bass, 2 carp and 3-4 J. Bass. Move downstream to 35th street bridge and fish bridge pylone upstream along N bank. Capture many J. bass at bridge also 2 or 3 A. bass. Also capture many J. Bass along S shore at submerged stumps located throughout.

Total for day 6 carp (4 18-22", 2 > 23"), 3 A. bass, 20 J. bass.

Lm Bass abundant at this location, many < 18" carp, many mid-size bass (9-13")

1:00-5:30 pm Process fish from N. Richmond & Morrow Pond. Core up 1 carp shoot off sample for N. Richmond when 23" fish shanks (overnight - on ice) to < 23".

10/16/97 Crew: KOS, RTF, PMW N. Adaniya - Oversight Cloudy, warm mid 50's
Electrofishing at N. Richmond (ABSA #11) 10:00 am - 4:00 pm
Begin fishing at 1st side channel into Morrison Bayou (S. Shore) downstream from ramp. Fish both N & S shore in general vicinity of this side channel (approx. 2.5 mile). Collect 5 A. Bass and remaining juvenile bass (18), also collect 1 > 23" carp. Collect 2 additional A. Bass further upstream at backwater area next to factory intake (1st bend upstream of side channel).
All fish captured w/ electrofishing boat.
5:00 pm - 7:00 pm process J. Bass taken from N. Richmond

10/17/97 Crew: KOS, RTF, PMW N. Adaniya - Oversight cloudy, cool, mid 50's
Lake Allegan 9:00 am - 12:30 pm (ABSA #9)
Electrofishing in 2 small coves across lake from launch site. (S. Shore). Continue fishing S. Shore upstream to sandy point midway in lake. Capture 5 carp 18-22", 3 A. Bass and 6 J. Bass. All carp are v. small, difficult to locate indiv > 18". Small to mid-size bass (9-12") abundant, largemouth bass also relatively abundant
All fish captured w/ electrofishing boat
1:00 - 5:30 pm process fish from 10/17 (Lake Allegan) and 10/16 (N. Richmond).

10/20/97 Crew: KOS, OKR, PMW R. French & Ian Grille - Oversight Cloudy, cool, high
Electrofishing at Marrow Pond 12:00 - 6:30 pm
Pst in at 53rd St. Bridge, from 50 yds downstream of bridge (both banks) and along N shore to Dam Brest, across brest and along downstream 1/4 of S. Shore. Juvenile bass are numerous and sample is nicely completed. Carp are numerous and we complete carp sample. A. bass captured at bridge, immediate upstream of bridge and along remainder of shore. Many undersize indiv captured (9-12 in), indiv. greater than 13" in length difficult to locate. Also many Lm Bass > 19". Lm more common than Sm. Also observed several (3-4) large Walleye during collection effort.
Totals for Day: 2 carp 18-22", 5 carp > 23", 6 A. Bass, 1 J. Bass composite (5 indiv.).
Sm present along dam brest and along S shore adjacent to dam, most were undersized but numbers were higher than most other sampling locations. All fish captured w/ electrofishing boat.

10/21/97 Crew: KOS, OKR, PMW I. Grille - Oversight pthly sunny, windy, choppy mid 40's
10:00 am - 6:30 pm slight drizzle in pm.
Electrofishing almost entire lakeshore beginning w/ S. Shore cove across from boat ramp. Again have success in channel leading to 1st cove. See no large > 23" carp, finish sample of 18-22" carp. Also difficult to locate carp > 18" in length. Sm numerous in lake but most were 9-13". Smallmouth taken was split approx 50/50 N. Shore vs. S. Shore. Many Juvenile Sm taken along Rpt/Rpt along Allegan. On Random patches of structure (mostly submerged) again is most productive for A. Sm Bass. Lm Bass not so numerous, only one large Walleye observed during entire day.

Electrofished w/ 2 min crew from 12:00 - 2:00. Third crew member aided oversight in efforts to get

oversight engine repaired. Steer pin had again broken and jammed into prop collar. We could not fix in field. We could not get engine repaired and had to tow oversight for remainder of day.

Totals for day: 7 carp 18-22", 7 adult bass, 3 J. bass composites (15 indiv). All fish captured w/ electrofishing boat.

10/22/97 Crew: KDS, OKR, PMW Oversight: I. Gillis Cloudy, light snow showers high 30's

Am - Process fish from Morrow Pond and Lake Allegan. Wait over 2 hrs for oversight to acquire new rental engine.

Pm - Check on Plainwell Dam Access and decide against going into Plainwell dam due to late start and considerable effort needed to clear access to river behind dam. Put in at Lake Allegan (4:00-7:00) and collect remaining 2 A. Bass and 4 J. Bass to complete L. Allegan sample. A. bass taken at upstream downstream cove (S. shore) and upstream from cove along S. shore. J. bass taken along Allegan Dam.

Rd. riprap and along N. shore downstream of rocky pt.

Totals for Day: 2 A. bass 4 indiv J. Bass All fish captured w/ electrofishing boat.

10/23/97 Crew: KDS, OKR, PMW Oversight: I. Gillis cloudy mid 40's

Plainwell Dam (9:30-5:30)

Clear access and put into River next to Puell Dam. Spend Am electrofishing between Dam and Rt. 131 Bridge. Capture all A. Bass (all in 13.5-15.5" size limit), all J. Bass (25 indiv) and all large carp >23" plus 2 18-22" indiv. Bass abundant throughout this reach of River (both adults and juveniles). Large carp also abundant throughout. Smaller carp <23" v. difficult to locate. In Pm, negotiate rapids at 131 Bridge and fish upstream of bridge to Plainwell WWTP outfall to capture remaining 4 18-22" carp (this after another 1.5 hrs spent trying to locate this size fish in original reach from Dam to 131 Bridge). Got pulled out of access by Dave's towing. Totals for Day: 6 carp 18-22", 6 carp >23", 12 A. bass, 5 J. bass composites (25 indiv). All fish captured w/ electrofishing boats.

10/24/97 Crew: KDS, OKR, PMW Oversight: R. French cloudy mid 40's

N. Richmond (10:30-12:30)

Electrofishing N. Richmond location in attempt to capture 2 A. Bass required to complete sample for this locat.m. Run down to 1st side channel into Morrison Bayou and fish structure in vicinity of this channel (both banks). Capture no acceptable size A. Bass. Run up to sample in vicinity of N. Shore backwater area where we captured bass 10/16 and could not fish area because of presence of one indiv. who was fishing in the area we wanted to shoo. Fish further upstream and again capture no keeper A. Bass. Try fishing at 55th st. bridge w/ similar results (no keepers).

1:30-5:30 Process fish from 10/22 & 10/23

10/27/97 Crew: KOS, OKR, PMW Oversight: Nicole Adaniya cloudy, cold high 30s
Electrofishing at N. Richmond From 2:30 - 5:00 pm snow on ground.
Focus on Bridges immediately upstream of N. Richmond ramp, then down to band in River along side of RR tracks and back up to ramp & bridges. Capture 2 Adult bass to complete N. Richmond Sample. Both bass taken from bridge(s) immedi. upstream of ramp.

10/28/97 Crew: KOS, OKR, PMW Oversight: N. Adaniya cloudy, cool mid 40s
Electrofishing at Morrow Pond. Put in at 53rd Bridge, focus on Bridge pylons and area immedi. upstream to point where 93 sampling effort extended to (approx 20 yds upstream of Bridge) with no luck. Fish along N bank of lake, see no keepers. Move on to Dam Brest and s. shore in immedi. vicinity of Dam. Capture 3 indiv in this area, all somewhat small. Fish from 8:45 - 1:15 pm and capture only these 3 fish.
Discontinue sampling effort after additional fishing along N. shore from Dam Brest to Boat Ramp in E. Comstock. Morrow Pond sample is complete w/retention of these 3 indiv.

Begin sampling at Bottle Creek. Fish from 2:00 - 4:30 in Area downstream of Park. Move down river approx. 1/2 mile and work our way back up to ramp. Adult SM. bass v. numerous, easily collect 12 indiv. > 13.5 inches - also take 9 J. Bass. See no carp throughout entire time on River. Discontinue sampling early to check on Generator that is overheating. Go back to Field office and process fish and check on intake/cooling pump for Generator. Fix pump and process fish from N. Richmond and Morrow L., Bottle Creek.

10/29/97 Crew: KOS, OKR, PMW Oversight: N. Adaniya sunny, warm mid 60s.
Put in at Park and electrofish from 9:00 am - 12:00 pm. Focus on area in immedi. vicinity of ramp and upstream past I-43 Bridge to capture remaining yearling fish. Capture all remaining juveniles and also 5 additional Adult bass (in preferred size range). Disable engine during efforts to locate final 2 juvenile bass. Remove boat from water and take to shop for engine check. Go back to Field Office and process fish from today. Again see no carp during entire day/morning of electrofishing.

10/30/97
Receive news from Marina that engine cannot be repaired by this afternoon. Decide to end sampling effort and continue once engine has been repaired. Leave site this week.

11/10/97 Crew: KOS, OKR Oversight: Nicole Adaniya Windy Sunny cold high 30s
Electrofishing at Ceresco Res. 1
Put in adjacent to Dam, motor upstream past old Bridge abutments and capture entire carp sample from upstream reaches of the impoundment. Deeper parts of the impoundment include s. shore (upper reach), almost the entire lower area is v. shallow (< 2 ft deep) and difficult to navigate. Oversight did not have boat and we dropped it at N. Shore Bridge abutment to observe collection activities. After collections were completed, got winched out of access to Rocky's Wrecking.

Kalamazoo River
Fish Collection Field Data
1997

Attachment A-1

Fish Collection Field Data Sheet

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

ATTACHMENT A-1

FISH COLLECTION
FIELD DATA SHEETCollection Time 10:30 am - 6:00 pmCollection Date 10/14/97Water Body K20 RiverSampling Location N. Richmond ABGA #11Collected By KDS ~~SE~~ PMW ^{KF}Processed By KDS ~~SE~~ PMWOversight: Med. Admin.Sampling Method Electro-fishing BJT

Dimension and Mesh Size of Seine (if applicable) _____

| Sample # | Species | Total Length(cm) | Weight (g) | Gender | Sample Type | Comments |
|-----------|---------------|------------------|------------|--------|-------------------|----------|
| K40500 | Sm Bass Adult | 43 | 1000 | | Fillet | Mark |
| K40501 | Sm Bass Adult | 44 | 1300 | | Fillet | NM |
| * K40502 | Sm Bass Adult | 39.0 | 950 | | " | NM |
| K40503-C | Sm Bass Juv | 18 | 74 | | W-waddy Composite | NM |
| | | 20 | 90 | | | NM |
| | | 18 | 75 | | | NM |
| | | 17 | 58 | | | NM |
| | | 17 | 75 | | | |
| K40504-C1 | Sm Bass Juv | 17 | 61 | | W-waddy Composite | NM |
| " | " | 14 | 95 | | " | NM |
| * K40505 | Adult Carp | 70 | 5.8 Kg | | Fillet | Mark |
| K40506 | Adult Carp | 66 | 6.1 Kg | | Fillet | NM |
| K40507 | Adult Carp | 58 | 3.0 Kg | | Fillet | NM |
| K40508 | Adult Carp | 60 | 3.3 Kg | | Fillet | NM |
| K40509 | Adult Carp | 65 | 4.0 Kg | | Fillet | NM |
| K40510 | Adult Carp | 57 | 2.9 Kg | | Fillet | NM |
| K40511 | Adult Carp | 55 | 2.5 Kg | | Fillet | NM |
| K40512 | Adult Carp | 52 | 2.1 Kg | | Fillet | NM |

* Max Fish Collected per MOEA Request

* Within Size Restriction For Sm Bass

**FISH COLLECTION
FIELD DATA SHEET**

Dimension and Mesh Size of Seine (if applicable) _____

[illegible]

ATTACHMENT A-1

FISH COLLECTION FIELD DATA SHEET

Collection Time 9:00 am - 12:00 pm

Collection Date 10/15/07

Water Body K20 River

Sampling Location Marlow Lake AGSA #2 Collected By KDS, RJE, PMW

Processed By KDS, PMW

Observer(s): Wanda Adams

Sampling Method Electrofishing

Dimension and Mesh Size of Seine (if applicable) _____

| Sample # | Species | Total Length(cm) | Weight (g) | Gender | Sample Type | Comments |
|----------|----------------|------------------|------------|--------|------------------|----------|
| K40517-C | Juvenile Smelt | 18.5 | 84 | | W-body Composite | NM |
| | " | 19 | 91 | | " | NM |
| | " | 14 | 34 | | " | NM |
| | " | 20 | 87 | | " | NM |
| | " | 18 | 79 | | " | NM |
| K40518-C | Juvenile Smelt | 18.5 | 76 | | W-body Composite | NM |
| | | 16 | 52 | | | NM |
| | | 14.5 | 40 | | | NM |
| | | 14.5 | 38 | | | NM |
| | | 15.5 | 48 | | | NM |
| K40519-C | Juvenile Smelt | 15.5 | 46 | | W-body Composite | NM |
| | | 15.0 | 40 | | | NM |
| | | 19.5 | 94 | | | NM |
| | | 16.0 | 51 | | | NM |
| | | 14.5 | 39 | | | NM |
| K40520-C | Juvenile Smelt | 18 | 73 | | W-body Composite | NM |
| | | 19 | 90 | | | |
| | | 16 | 50 | | | |

FISH COLLECTION
FIELD DATA SHEET

Dimension and Mesh Size of Seine (if applicable) _____

[illegible]

OKEMOS PUBLIC SCHOOLS

SCHOOL CALENDAR 1998-99



| AUGUST | | | | | | |
|--------|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
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| 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 30 | 31 | | | | | |

| SEPTEMBER | | | | | | |
|-----------|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| | | 1 | 2 | 3 | 4 | 5 |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 | | | |

| OCTOBER | | | | | | |
|---------|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| | | | | 1 | 2 | 3 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 | 29 | 30 | 31 |

| NOVEMBER | | | | | | |
|----------|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | | | | | |

| DECEMBER | | | | | | |
|----------|----|----|----|----|----|----|
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| 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 | 31 | | |

| JANUARY | | | | | | |
|---------|----|----|----|----|----|----|
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| 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 30 | 31 | | | | | |

| FEBRUARY | | | | | | |
|----------|----|----|----|----|----|----|
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| 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | | | | | | |

| MARCH | | | | | | |
|-------|----|----|----|----|----|----|
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| 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | 29 | 30 | 31 | | | |

| APRIL | | | | | | |
|-------|----|----|----|----|----|----|
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| 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 30 | | | | | | |

| MAY | | | | | | |
|-----|----|----|----|----|----|----|
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| 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 30 | 31 | | | | | |

| JUNE | | | | | | |
|------|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| | | 1 | 2 | 3 | 4 | 5 |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 | | | |

| JULY | | | | | | |
|------|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| | | | | | | 1 |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 30 | 31 | | | | | |

IMPORTANT DATES FOR STAFF AND STUDENTS

August 27 Planning Day/No School All Day
 August 28 No School All Day
 August 31 1st Day School for Students
 August 31 K-12 Records Day, No School PM
 September 7 Labor Day
 October 6 K-8 Inservice Day, No School PM
 9-12 P/T Conferences, No School PM
 *Weeks of Oct 5 & Oct 12, 9-12 P/T Conferences
 *Weeks of Oct 26 & Nov 2 K-8 P/T Conferences
 October 26 K-8 Records Day, No School PM
 9-12 Inservice Day, No School PM
 October 30 End of First Quarter
 November 3 K-8 P/T Conferences, No School PM
 9-12 Records Day, No School PM
 November 6 K-12 No School PM
 November 25 End of Middle School Trimester
 Nov. 26, 27 Thanksgiving Recess
 Dec. 23-Jan. 1 Winter Recess
 January 4 School Resumes
 January 13, 14 9-12 Records Days, No School PM
 January 15 K-12 Records Day, No School PM
 January 15 End of First Semester
 January 27 K-8 Inservice Day, No School PM

March 3 K-5 Inservice Day, No School PM
 6-12 P/T Conferences, No School PM
 March 12 End of Middle School Trimester
 March 26 End of Third Quarter
 March 30 K-5 P/T Conferences, No School PM
 6-12 Inservice Day, No School PM
 April 1 K-12 No School PM
 April 2 K-12 No School All Day
 April 5-9 Spring Recess
 May 3 K-8 Inservice Day, No School PM
 May 31 Memorial Day
 June 8 9-12 Records Day, No School PM
 June 9, 10 K-12 Records Day, No School PM
 June 10 Last Day School for Students
 June 11 Planning Day, No School All Day
 June 11 End of Second Semester & End of Middle School Trimester

CODE:

- ⊗ Planning Days/No School Days
- / Holidays, Vacation
- | End of Quarter/Trimester/Marking Period
- Parent/Teacher Conference Days
- Inservice/Record Keeping Days

ATTACHMENT A-1

FISH COLLECTION
FIELD DATA SHEETCollection Time 10:00 am - 4:30 pmCollection Date 10/16/97Water Body K200 RiverSampling Location New Richmond (Area #11) Collected By KDS, RJE, P.M.W.Processed By KDS, RJE, P.M.W.Over-sight W. C. AdamsSampling Method Electrofishing

Dimension and Mesh Size of Seine (if applicable) _____

| Sample # | Species | Total Length(cm) | Weight (g) | Gender | Sample Type | Comments |
|-----------|-------------|------------------|------------|--------|------------------|----------|
| K40504-C2 | Juv Sm bass | 15.5 | 54 | | W-body Composite | NM |
| ↓ | " | 15.5 | 50 | | ↓ | NM |
| | " | 18.0 | 75 | | ↓ | NM |
| K40530-C | Juv Sm bass | 19.0 | 82 | | W-body Composite | NM |
| ↓ | ↓ | 17.0 | 62 | | ↓ | NM |
| | ↓ | 16.5 | 60 | | ↓ | NM |
| ↓ | ↓ | 17.5 | 62 | | ↓ | NM |
| | ↓ | 17.0 | 58 | | ↓ | NM |
| K40531-C | Juv Sm bass | 18.0 | 73 | | W-body Composite | NM |
| ↓ | ↓ | 15.5 | 46 | | ↓ | NM |
| | ↓ | 18.0 | 78 | | ↓ | NM |
| ↓ | ↓ | 20.0 | 100 | | ↓ | NM |
| | ↓ | 18.0 | 86 | | ↓ | NM |
| K40532-C | Juv Sm bass | 18.0 | 78 | | W-body Composite | NM |
| ↓ | ↓ | 17.0 | 55 | | ↓ | NM |
| | ↓ | 17.0 | 60 | | ↓ | NM |
| ↓ | ↓ | 17.0 | 63 | | ↓ | NM |
| | ↓ | 15.0 | 45 | | ↓ | NM |

ATTACHMENT A-1

FISH COLLECTION FIELD DATA SHEET

Collection Time 9:29 - 12:15 pm

Collection Date 10/15/97

Water Body Lake Allegan ABSA #9 K200 River

Sampling Location Lake Allegan ABSA #9 Collected By KOS, RJF, Pmw

Processed By KOS, RJF, Pmw

oversight: Nicole Adeniyi

Sampling Method Electric fishing

Dimension and Mesh Size of Seine (if applicable) _____

| Sample # | Species | Total Length(cm) | Weight (g) | Gender | Sample Type | Comments |
|-----------|----------------|------------------|------------|--------|------------------|--------------------------|
| K40533-C | Juv Sm Bass | 19.5 | 90 | | w-body composite | NM |
| | | 18.5 | 78 | | | NM |
| | | 18.5 | 85 | | | NM |
| | | 18.5 | 67 | | | NM |
| | | 17.0 | 56 | | | NM |
| K40534-C1 | Juv Sm Bass | 17.5 | 58 | | w-body comp | NM |
| K40535 | Adult Carp | 50.0 | 1.7 kg | | Fillet | scar on left operculum |
| K40536 | Adult Carp | 47.5 | 1.1 kg | | Fillet | ulcerations |
| K40537 | Adult Carp | 46.5 | 1.1 kg | | Fillet | ulcerations |
| K40538 | Adult Carp | 41.5 | 1.4 kg | | Fillet | NM |
| K40539 | Adult Carp | 46.5 | 1.3 kg | | Fillet | NM |
| K40540 | Adult Sm. Bass | 37.5 | 680 | | Fillet | ulcers on left maxillary |
| K40541 | Adult Sm. Bass | 39.0 | 580 | | Fillet | NM |
| K40542 | Adult Sm. Bass | 36.0 | 590 | | Fillet | healed wound |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

FISH COLLECTION
FIELD DATA SHEET

Dimension and Mesh Size of Seine (if applicable) _____

[illegible]

ATTACHMENT A-1

FISH COLLECTION FIELD DATA SHEET

Collection Time 10:00 am - 12:00 pm

Collection Date 10/13/97

Water Body Kanab Reservoir

Sampling Location Lower Reservoir Collected By Kyle G. Smith, David G. Smith

Processed By Kyle G. Smith, David G. Smith 10/13/97

Sampling Method Electrofishing

Dimension and Mesh Size of Seine (if applicable) _____

| Sample # | Species | Total Length(cm) | Weight (g) | Gender | Sample Type | Comments |
|----------|---------------|------------------|------------|--------|-------------|---------------------------------|
| K40544-C | Juvenile Bass | 20 | 92 | | Composite | N/A |
| | | 19.5 | 92 | | | N/A |
| | | 18 | 78 | | | N/A |
| | | 18 | 83 | | | N/A |
| | | 14 | 83 | | | N/A |
| K40545-C | Juvenile Bass | 19.5 19 | 26 60.5 | | | Two small white patches on side |
| | | 20 | 103 | | | N/A |
| | | 18 | 71 | | | N/A |
| | | 18 | 67 | | | N/A |
| | | 15.5 | 47 | | | N/A |
| K40546-C | Juvenile Bass | 16.5 | 54 | | | Marked |
| | | 12.0 | 47 | | | N/A |
| | | 15.5 | 43 | | | N/A |
| | | 5.0 | 42 | | | N/A |
| | | 5.0 | 40 | | | N/A |
| K40547-C | Juvenile Bass | 0.5 | 14.4 | | | N/A |
| | | 11.0 | 17.0 | | | N/A |
| | | 11.0 | 18.0 | | | N/A |

FISH COLLECTION
FIELD DATA SHEET

Dimension and Mesh Size of Seine (if applicable) _____

[illegible]

ATTACHMENT A-1

FISH COLLECTION
FIELD DATA SHEETCollection Time 3:00 - 4:30Collection Date 10/28/97Water Body Kalamazoo RiverSampling Location Below LockCollected By KDS DCR BmwProcessed By KDS BmwM. Adenya - EvisceratedSampling Method Electricity Boat

Dimension and Mesh Size of Seine (if applicable) _____

| Sample # | Species | Total Length(cm) | Weight (g) | Gender | Sample Type | Comments |
|-----------|-------------------|------------------|------------|--------|----------------------|----------------------|
| K40615 | Adult Sm Bass | 45 | 1.3 Kg | | Female | N/M |
| K40614 | Adult Sm Bass | 46 | 1.4 Kg | | " | N/M |
| K40620 | Adult Sm Bass | 45 | 1.2 Kg | | " | N/M |
| K40621 | Adult Sm Bass | 45 | 1.6 Kg | | " | N/M |
| K40622 | Adult Sm Bass | 45 | 1.2 Kg | | " | N/M |
| K40623 | Adult Sm Bass | 44 | 1.2 Kg | | " | N/M |
| K40624 | Adult Sm Bass | 40.5 | 1.1 Kg | | " | N/M |
| K40625 | " | 36 | 740 g | | " | N/M |
| K40626 | " | 34 | 510 g | | " | N/M |
| K40627 | " | 37 | 730 g | | " | N/M |
| K40628 | " | 39.5 | 870 g | | " | Males N/M |
| K40629 | " | 44.5 | 1.3 Kg | | " | N/M |
| K40630-C | Turquoise Sunfish | 14 | 310 | | Whole-body Composite | N/M |
| | | 15.5 | 37 | | | |
| | | 15.5 | 52 | | | |
| | | 16 | 52 | | | |
| | | 17 | 60 | | | |
| K40631-C1 | TUV | 18.5 | 80 | | Whole-body Composite | N/M |

FISH COLLECTION
FIELD DATA SHEET

Dimension and Mesh Size of Seine (if applicable) _____

[illegible]

ATTACHMENT A-1

FISH COLLECTION
FIELD DATA SHEETCollection Time 9:20 am - 10:20Collection Date 10/22/07Water Body Butte CreekSampling Location Kalamazoo River Collected By KDR/DKR/PMWProcessed By DKR/PMWSampling Method Electrofishing BoatDimension and Mesh Size of Seine (if applicable) NA

| Sample # | Species | Total Length(cm) | Weight (g) | Gender | Sample Type | Comments |
|-----------|---------------|------------------|------------|--------|----------------------|----------|
| K40631-C2 | Juv. Sm. Bass | 13.5 | 30 | | Whole Body Composite | NM |
| K40632-C1 | Juv. Sm. Bass | 16.5 | 64 | | Whole Body Composite | NM |
| | | 16.5 | 58 | | | |
| | | 15.5 | 45 | | | |
| | | 15.5 | 48 | | | |
| | | 14.0 | 35 | | | |
| K40633-C1 | Juv. Sm. Bass | 17.5 | 75 | | Whole Body Composite | NM |
| | | 16.5 | 62 | | | |
| | | 14.5 | 39 | | | |
| | | 13.5 | 32 | | | |
| | | 13.0 | 27 | | | |
| K40634-C1 | Juv. Sm. Bass | 16.5 | 61 | | Whole Body Composite | NM |
| | | 16.0 | 51 | | | |
| | | 15.5 | 44 | | | |
| | | 15.0 | 45 | | | |
| | | 14.5 | 37 | | | |
| K40635 | Ad Sm. Bass | 36.2 | 740 | | Fillet | NM |
| K40636 | Ad Sm. Bass | 37.5 | 1100 | | Fillet | NM |

FISH COLLECTION
FIELD DATA SHEET

Dimension and Mesh Size of Seine (if applicable) NA

[illegible]

FISH COLLECTION
FIELD DATA SHEET

Dimension and Mesh Size of Seine (if applicable) _____

[illegible]

Attachment A-3

Carp Fish Condition Survey Form

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

ATTACHMENT A-3

CARP FISH CONDITION SURVEY FORM

Species _____

Fish No (s). K40513

Collection Date _____

Length _____

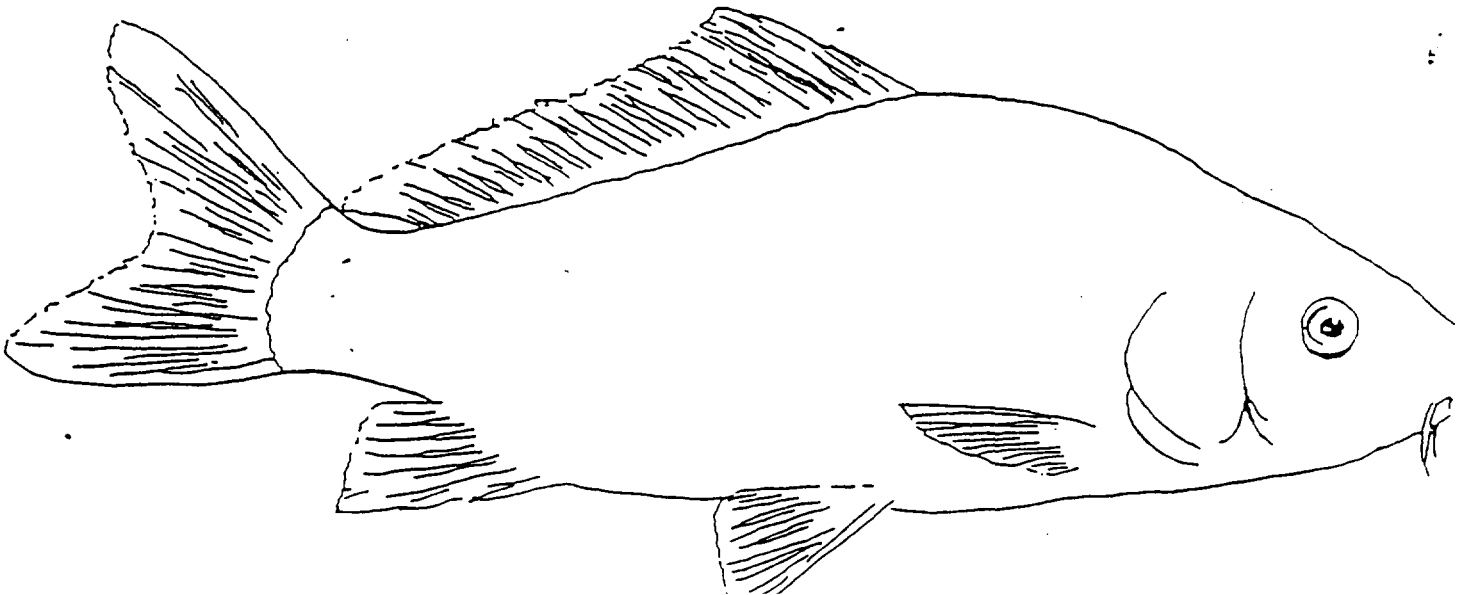
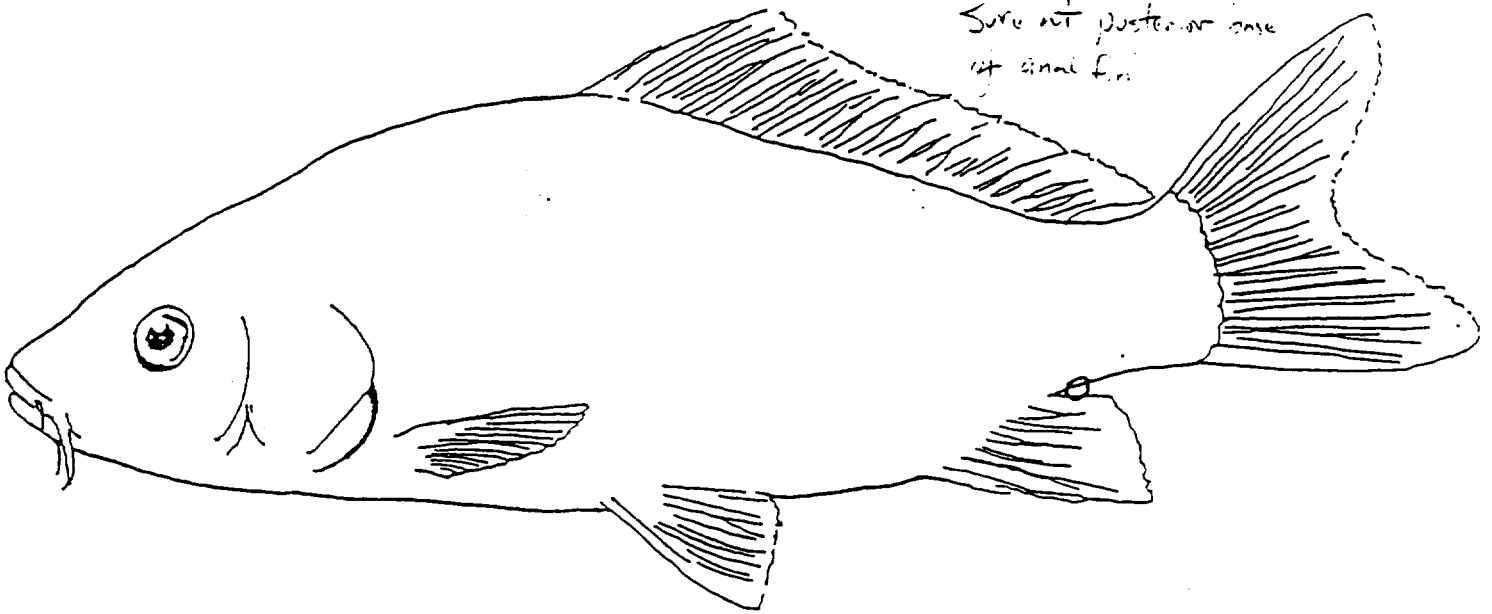
Collection Site _____

Weight _____

Collection Method _____

Photographs: ☒ Yes ^{Bill #1} No Frame No(s). 16 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



ATTACHMENT A-3

CARP FISH CONDITION SURVEY FORM

Species _____

Fish No (s). K40516

Collection Date _____

Length _____

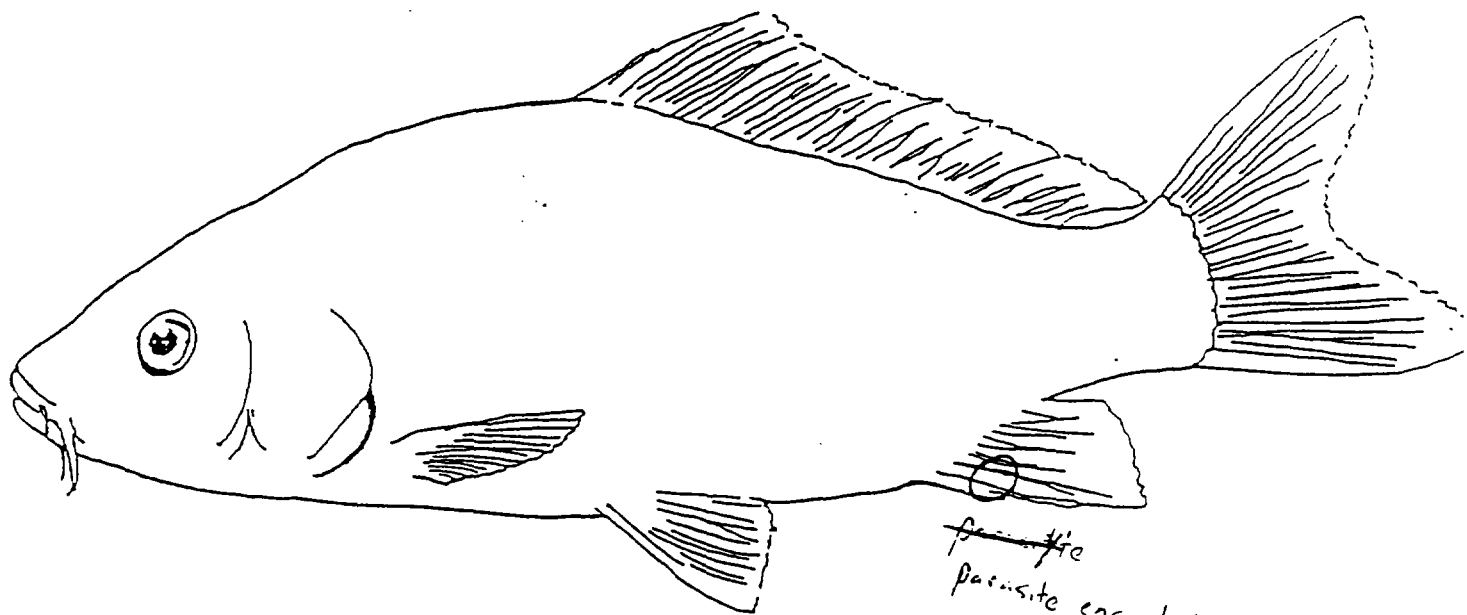
Collection Site _____

Weight _____

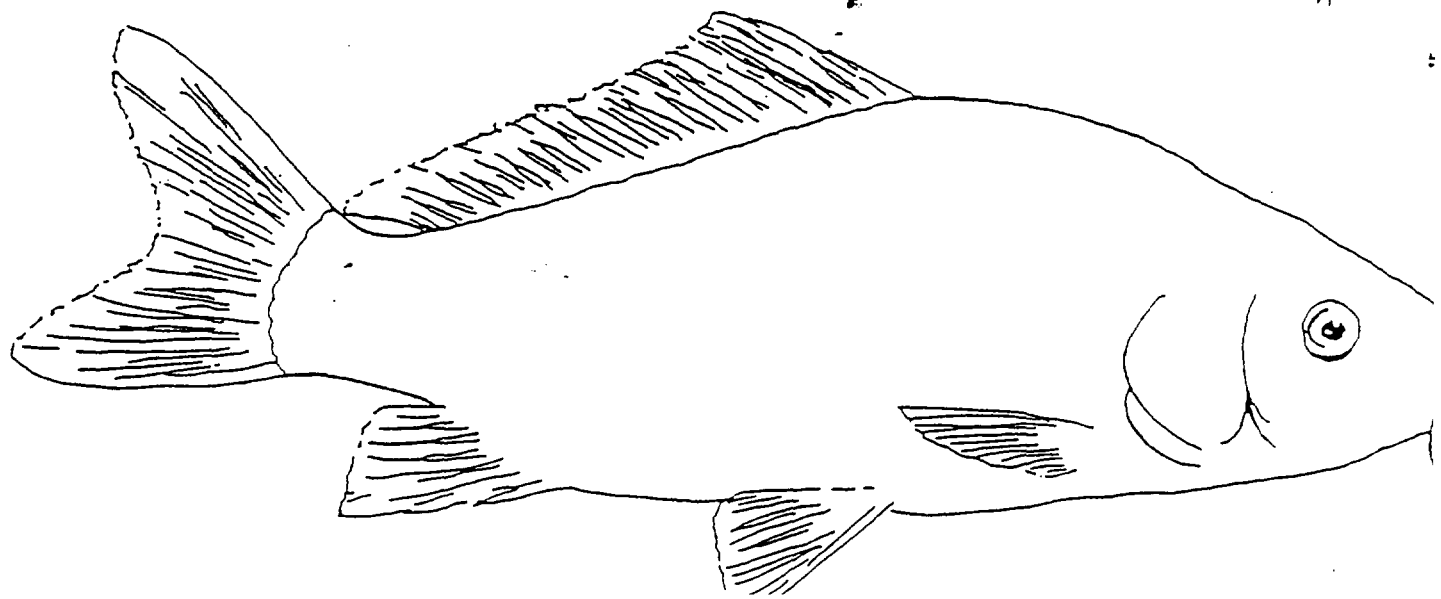
Collection Method _____

Photographs: Yes ^{R₀₁₁#1} No Frame No(s). 19 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



~~parasite~~
parasite encysted in Anal fin



ATTACHMENT A-3

CARP FISH CONDITION SURVEY FORM

Species _____

Fish No (s). K 40521

Collection Date _____

Length _____

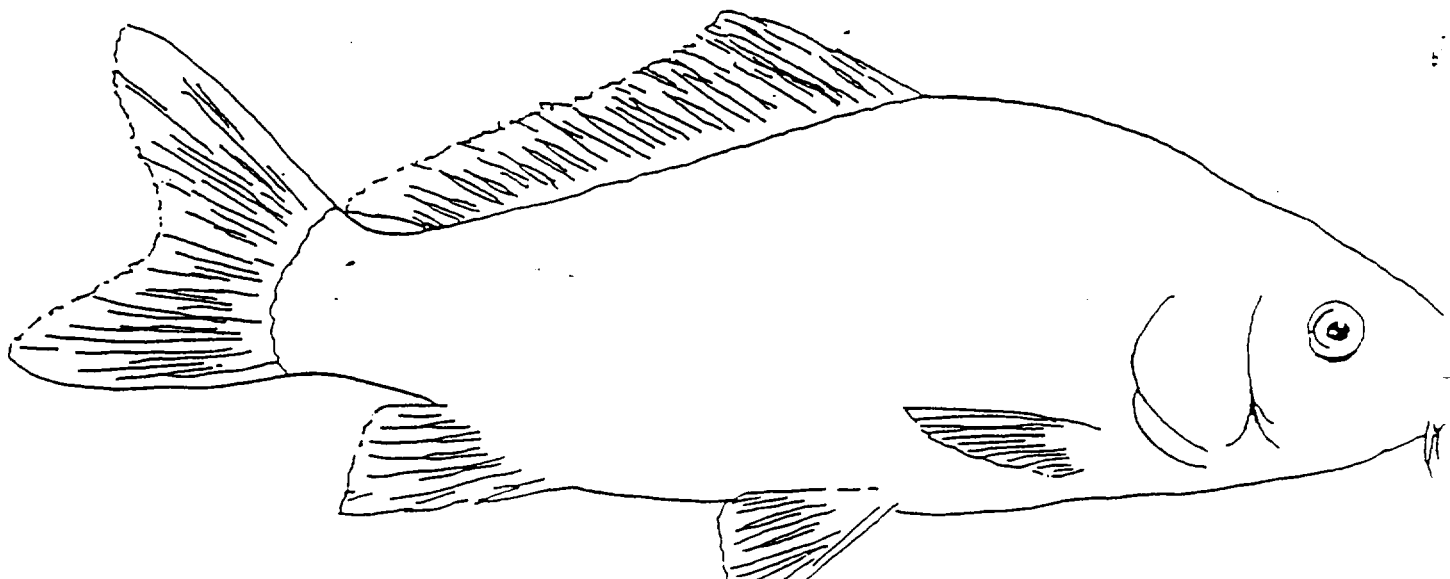
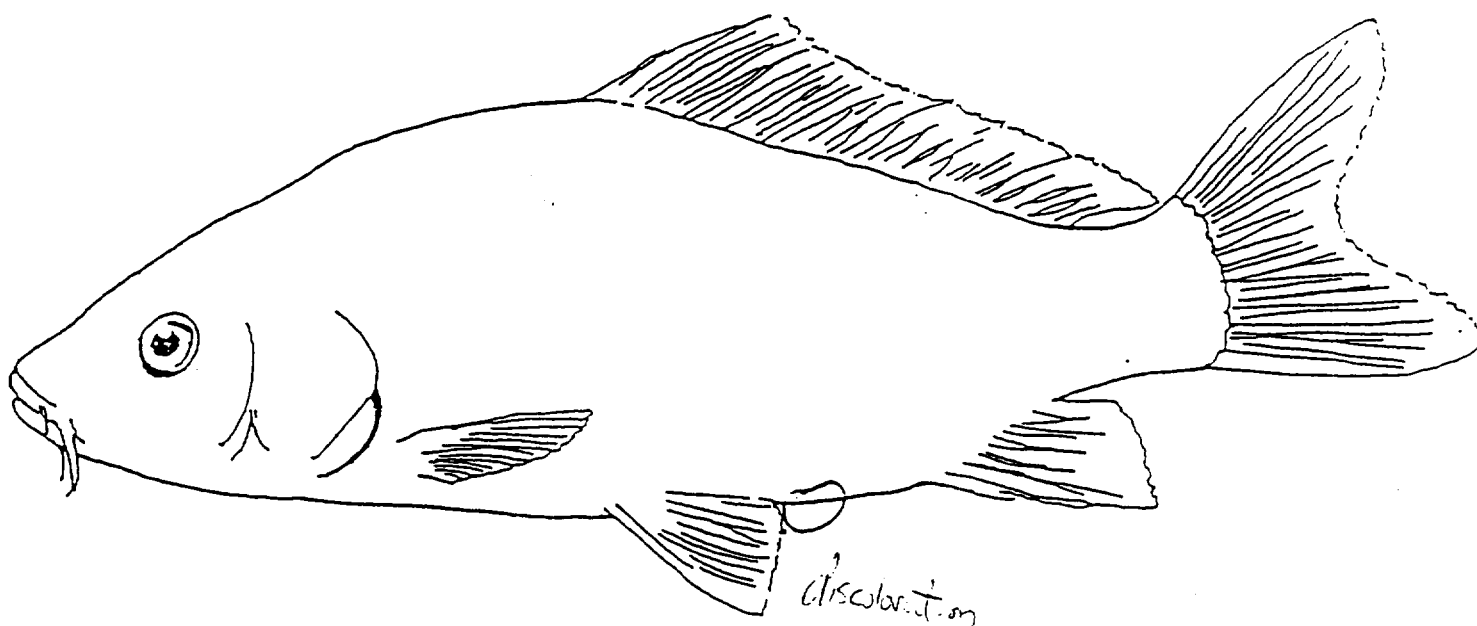
Collection Site _____

Weight _____

Collection Method _____

Photographs: Yes No ^{Roll #1} Frame No(s). 24 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



ATTACHMENT A-3

CARP FISH CONDITION SURVEY FORM

Species _____

Fish No (s). K 40522

Collection Date _____

Length _____

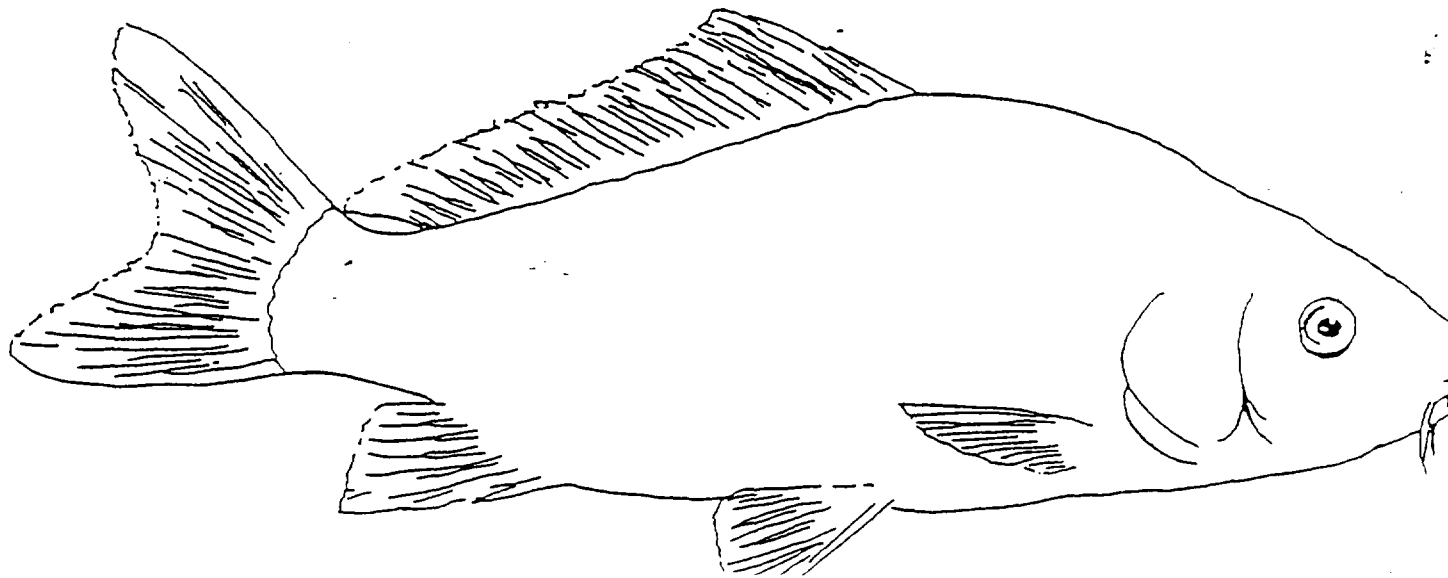
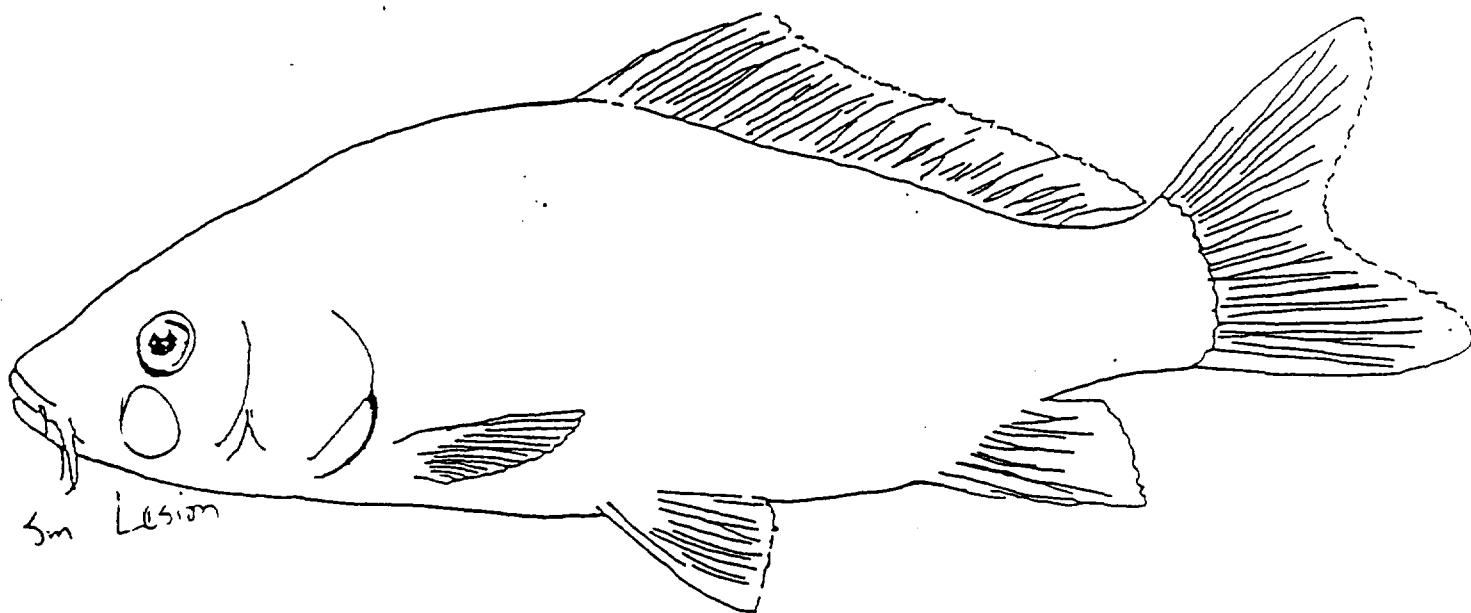
Collection Site _____

Weight _____

Collection Method _____

Photographs: Yes No ^{Roll #1} Frame No(s). 25 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



ATTACHMENT A-3

CARP FISH CONDITION SURVEY FORM

Species _____

Fish No (s). 14 40523

Collection Date _____

Length _____

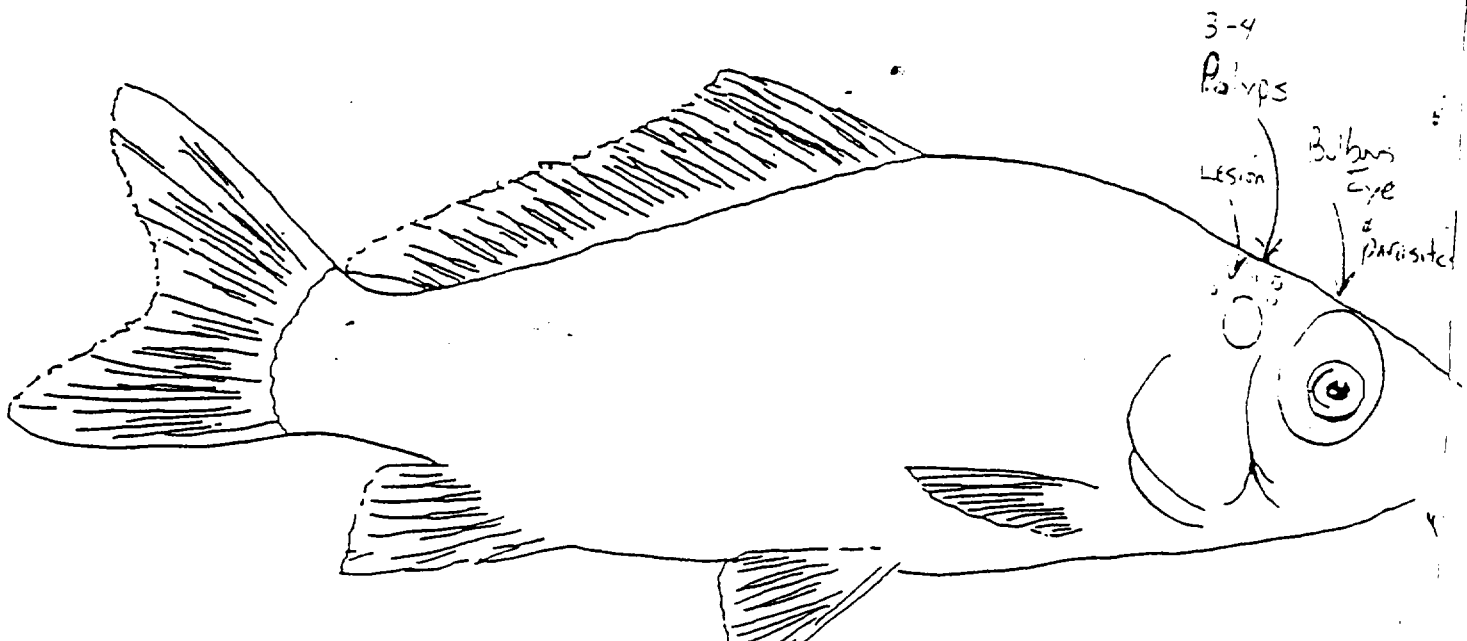
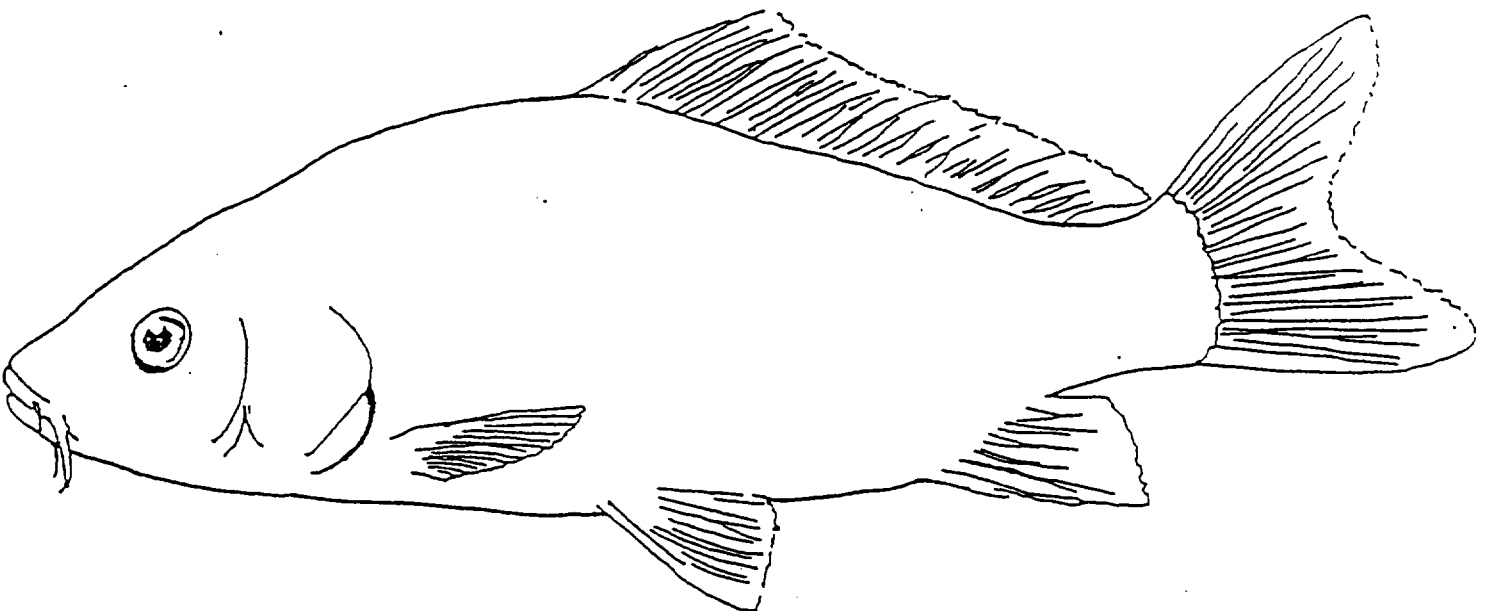
Collection Site _____

Weight _____

Collection Method _____

Photographs: Yes ^{R₃₁₁#1} No Frame No(s). 26427 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



ATTACHMENT A-3

CARP FISH CONDITION SURVEY FORM

Species _____

Fish No (s). K40535

Collection Date _____

Length 50 cm

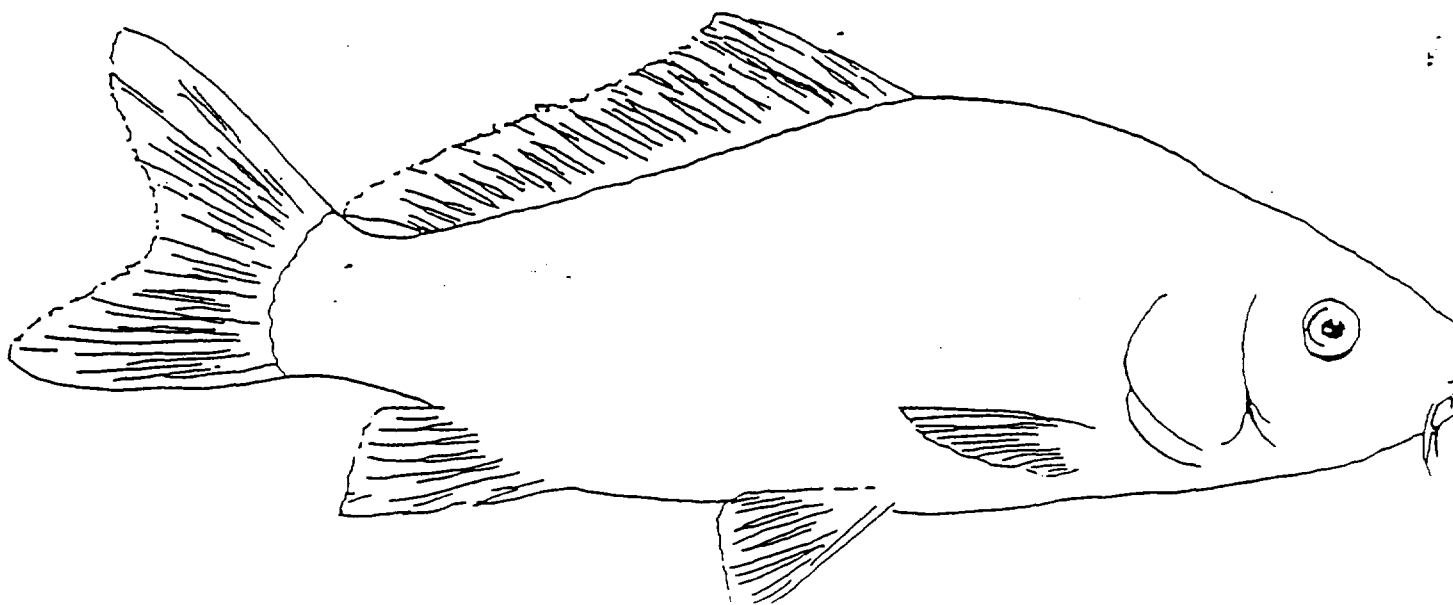
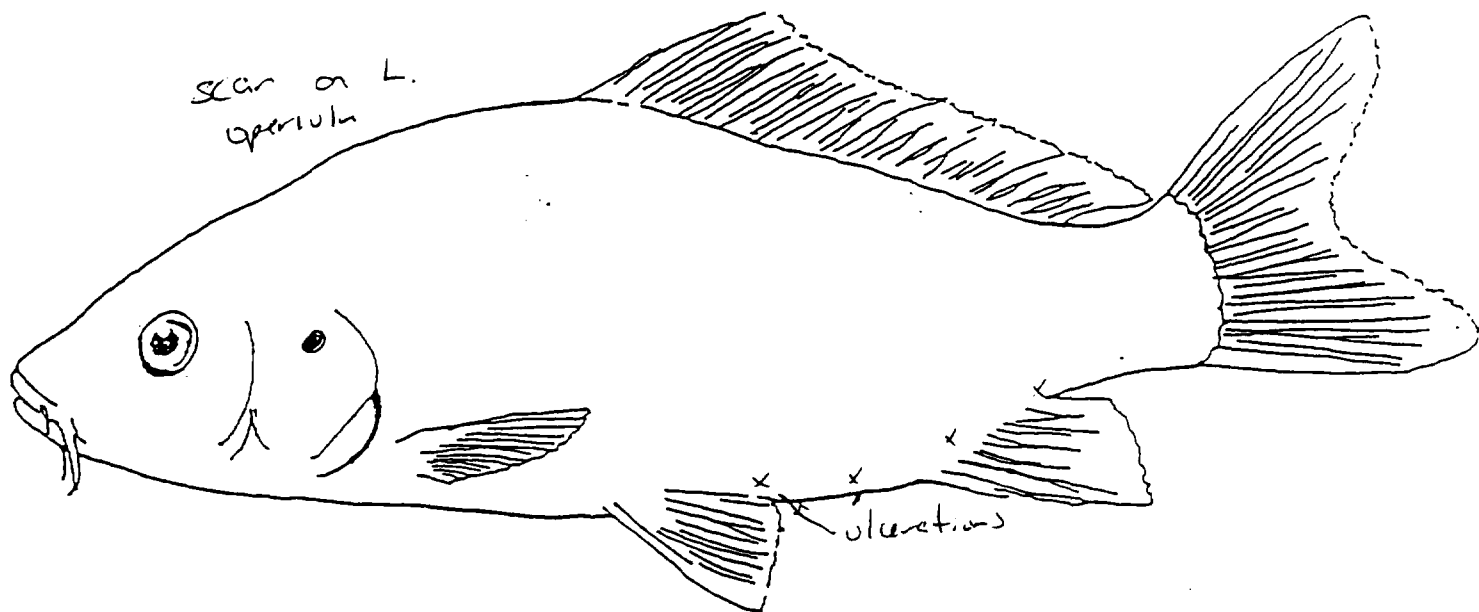
Collection Site _____

Weight 1.7 kg

Collection Method Electro fish

Photographs: Yes ^{Roll 2} No Frame No(s). 8 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



ATTACHMENT A-3

CARP FISH CONDITION SURVEY FORM

Species _____

Fish No (s). K40536

Collection Date _____

Length _____

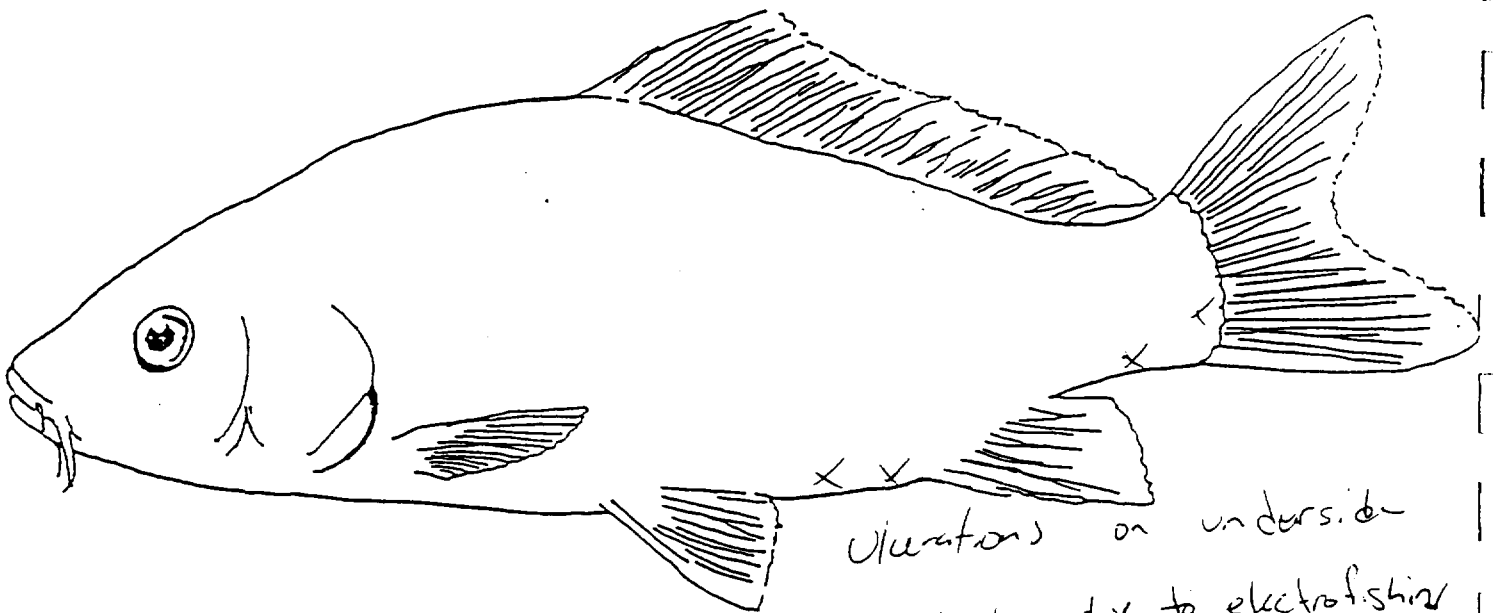
Collection Site _____

Weight _____

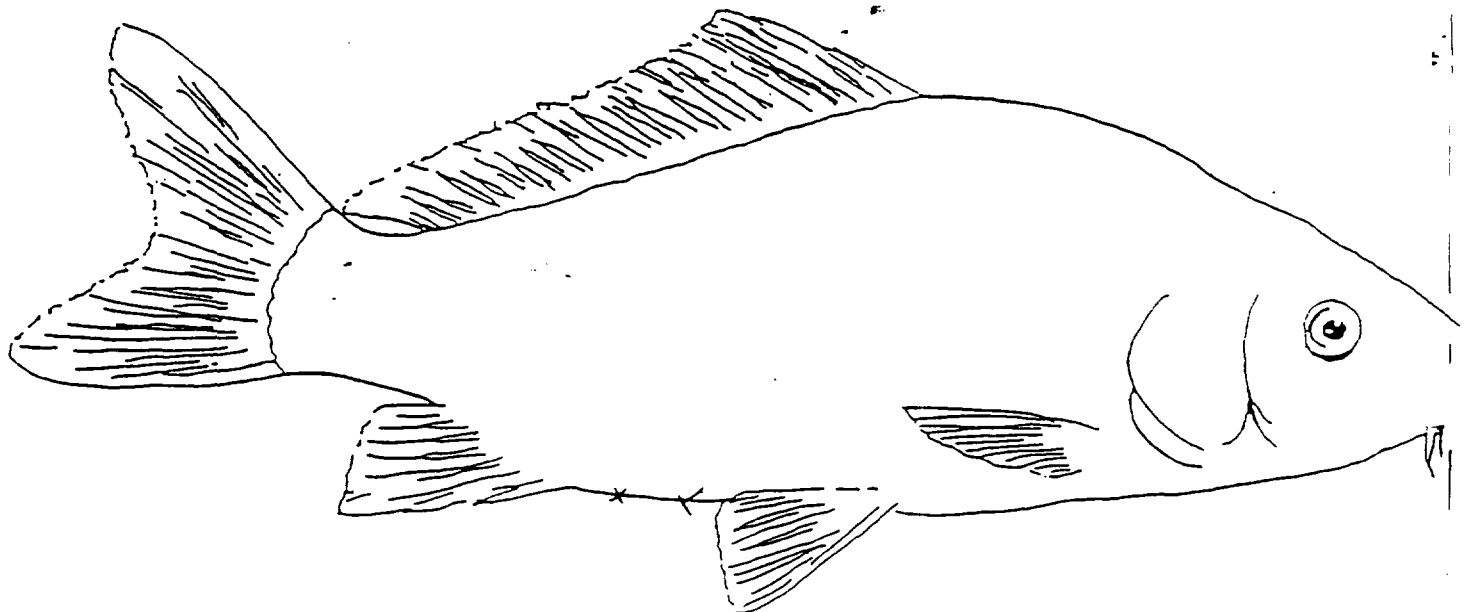
Collection Method _____

Photographs: Yes ^{Roll 2} No Frame No(s). 9 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



Ulcerations on underside
- could be due to electrofishing



ATTACHMENT A-3

CARP FISH CONDITION SURVEY FORM

Species _____

Fish No (s). K90537

Collection Date _____

Length _____

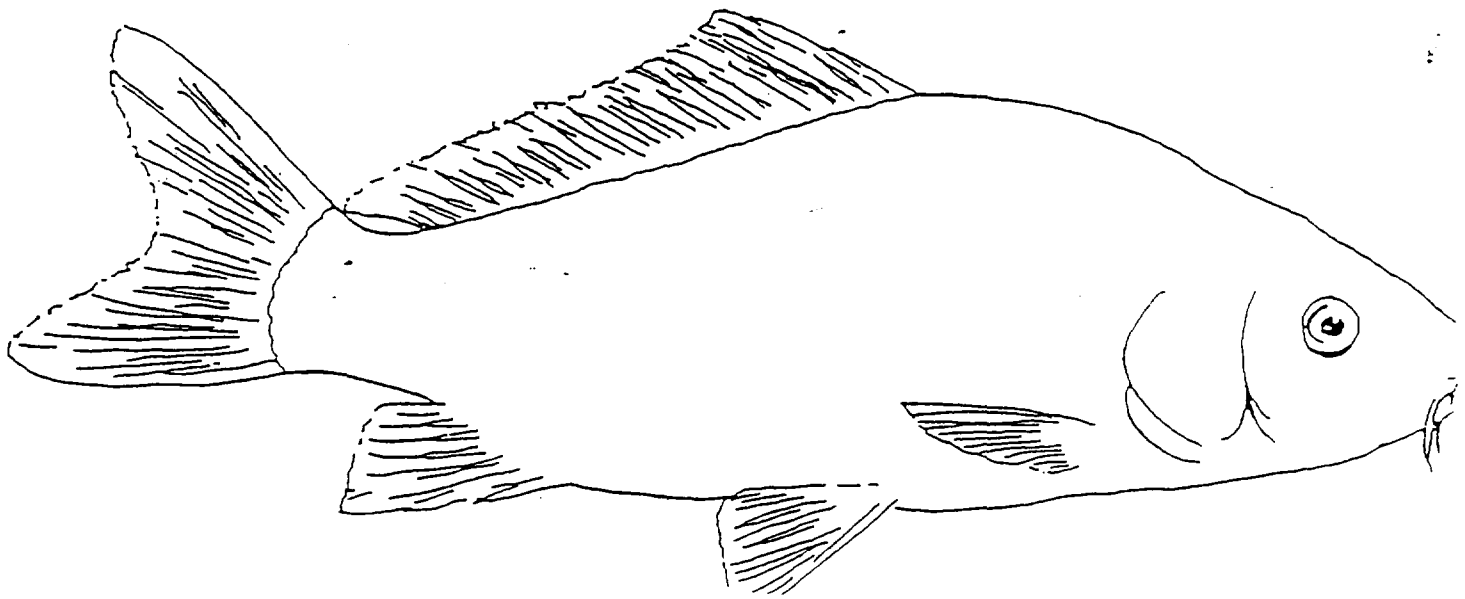
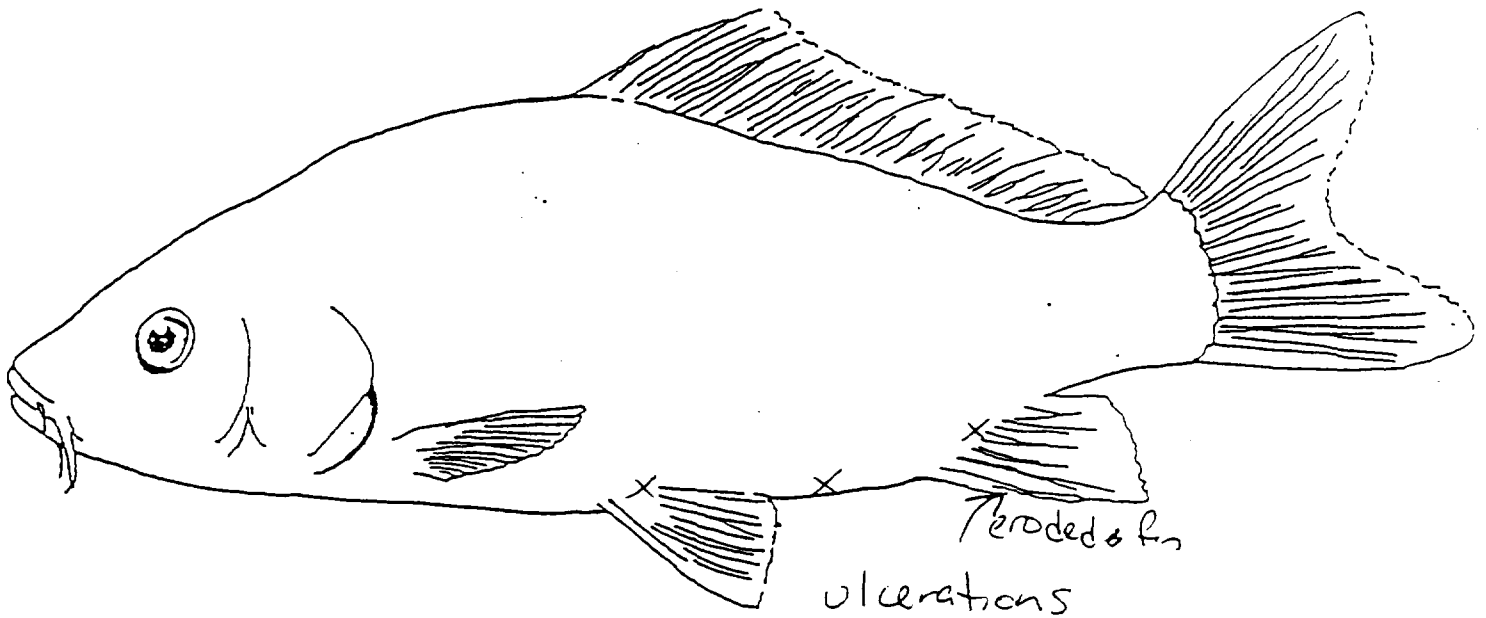
Collection Site _____

Weight _____

Collection Method _____

Photographs: Yes ☒ No ☐ Frame No(s). Roll #2 10 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



ATTACHMENT A-3

CARP FISH CONDITION SURVEY FORM

Species _____

Fish No (s). K40543

Collection Date _____

Length _____

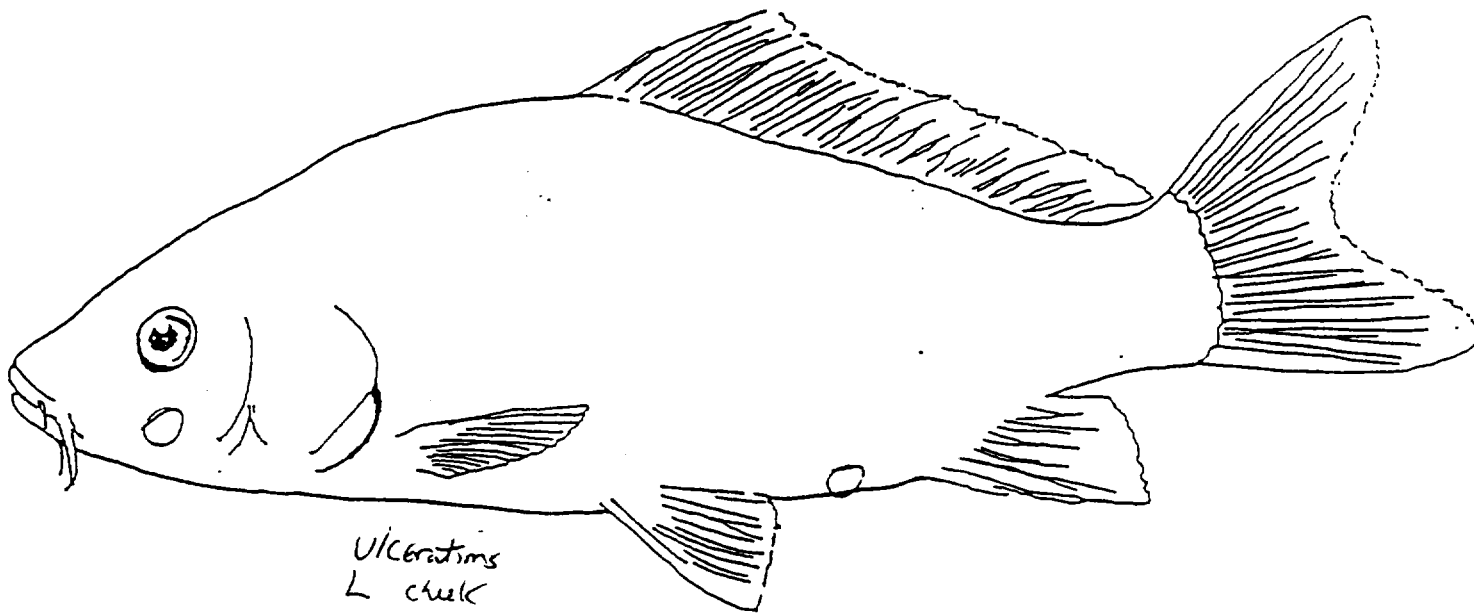
Collection Site _____

Weight _____

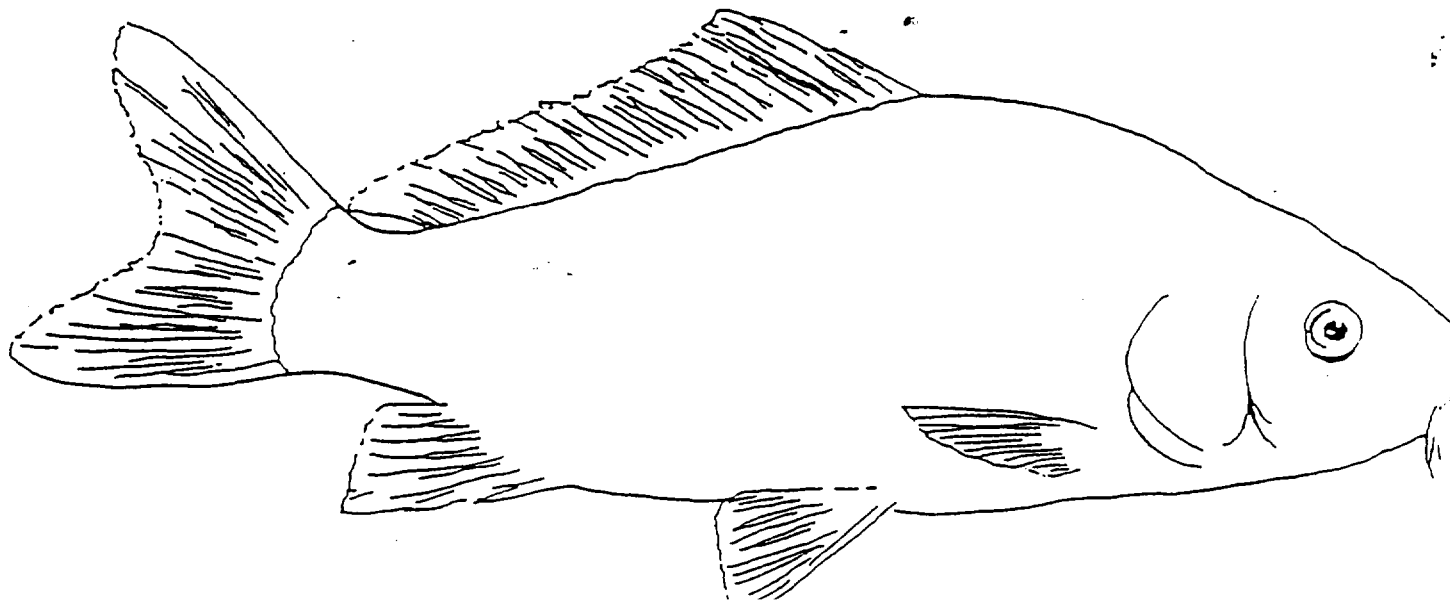
Collection Method _____

Photographs: ☒ Yes ☐ No R311#2 Frame No(s). 16 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



Ulcerations
L cheek
L side posterior to anus



ATTACHMENT A-3

CARP FISH CONDITION SURVEY FORM

Species _____

Fish No (s). K40553

Collection Date _____

Length _____

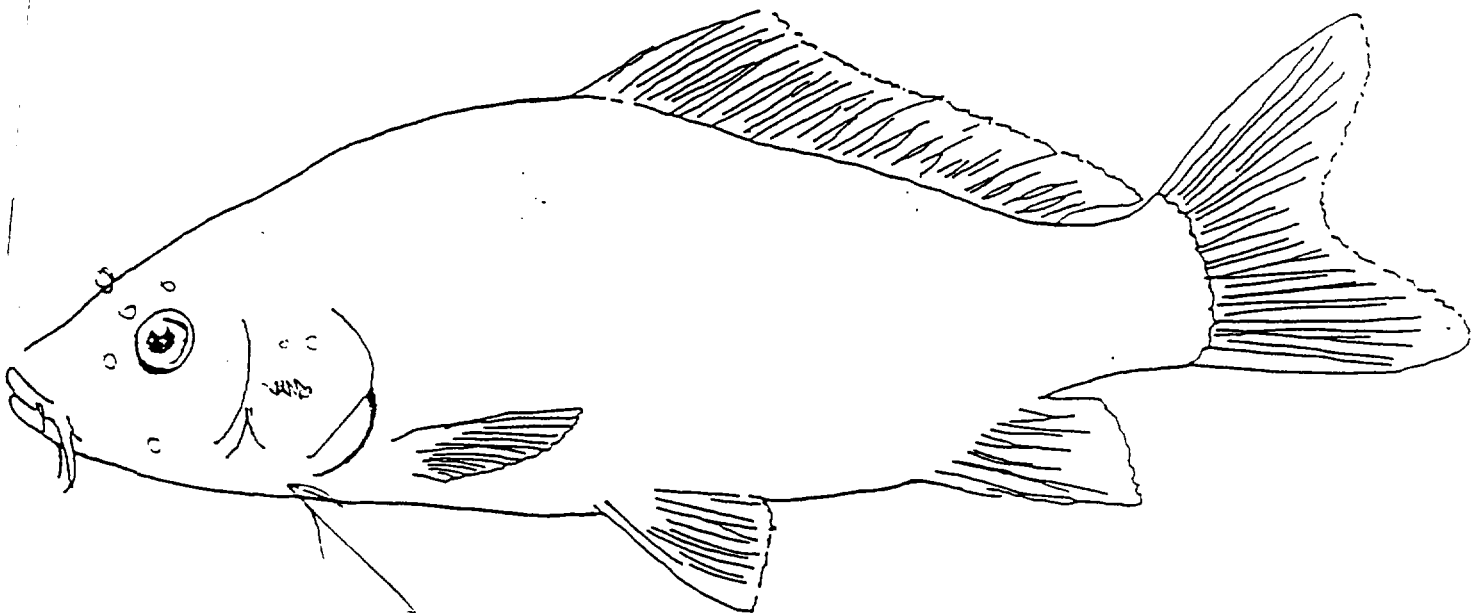
Collection Site _____

Weight _____

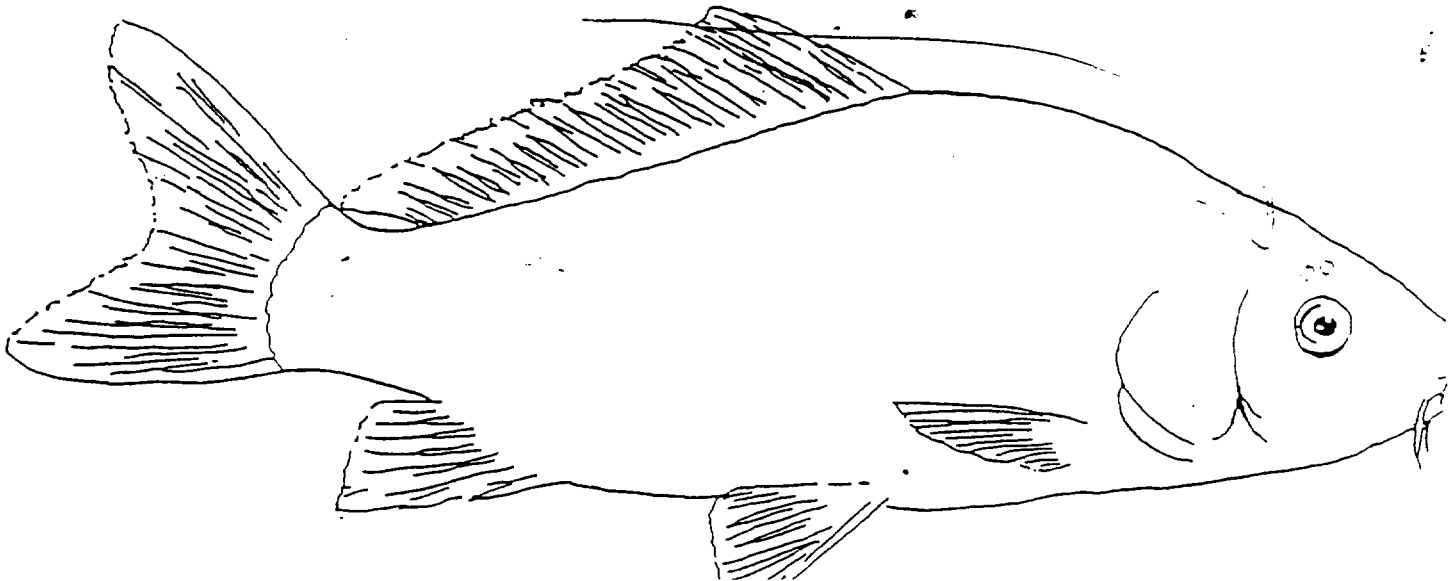
Collection Method _____

Photographs: ☒ Yes ☐ No ^{R. 1153} Frame No(s). 2 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



pap. Thomas



ATTACHMENT A-3

CARP FISH CONDITION SURVEY FORM

Species _____

Fish No (s). 1440555

Collection Date _____

Length _____

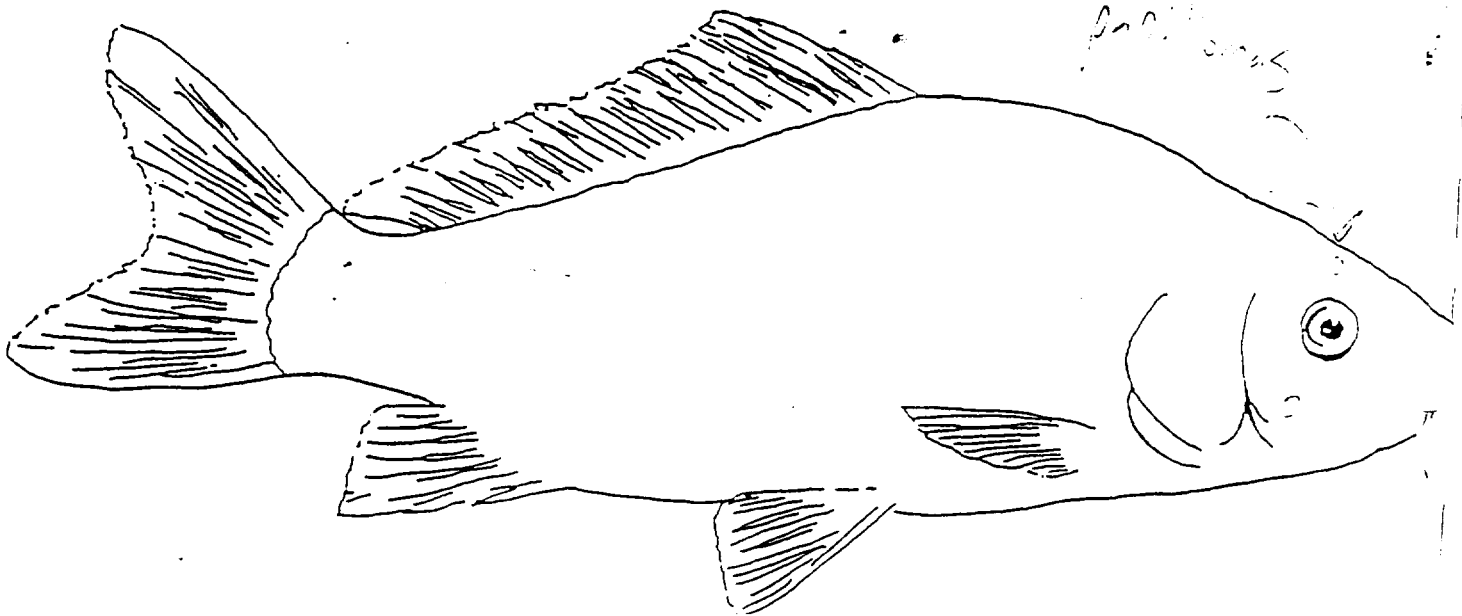
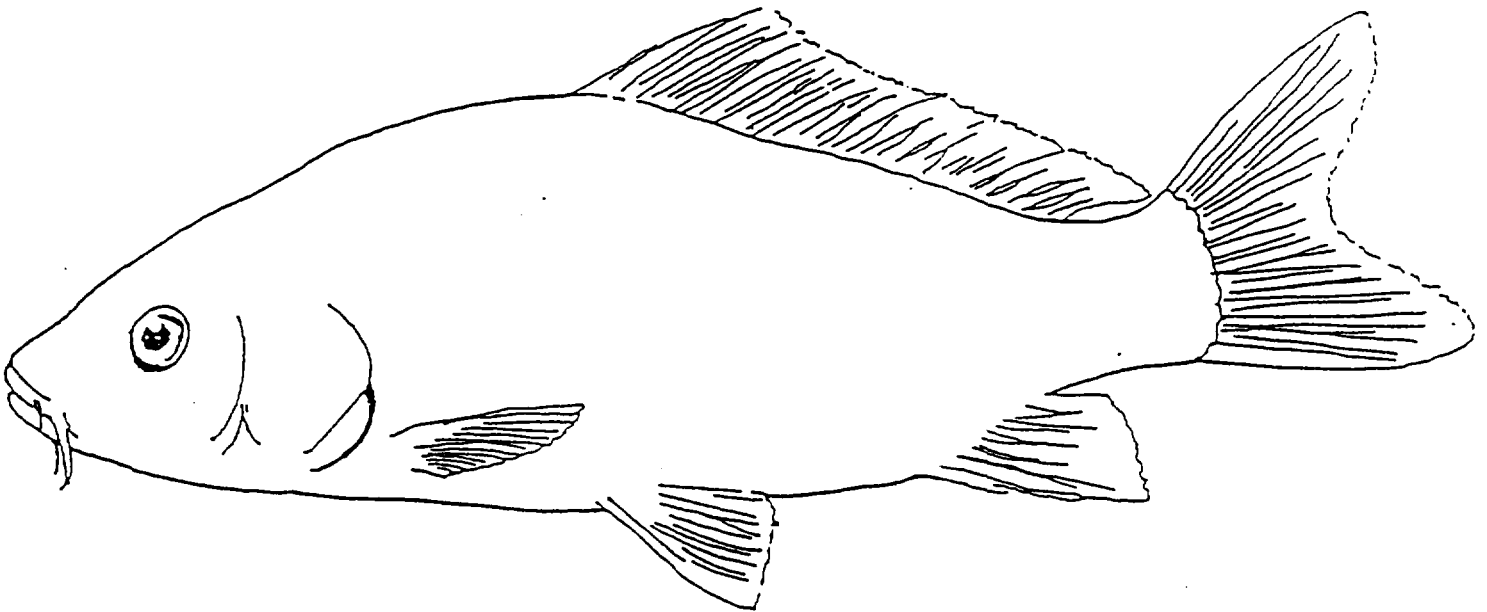
Collection Site _____

Weight _____

Collection Method _____

Photographs: ☒ Yes ☐ No ^{Roll #3} Frame No(s). 4 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



ATTACHMENT A-3

CARP FISH CONDITION SURVEY FORM

Species _____

Fish No (s). K 413571

Collection Date _____

Length _____

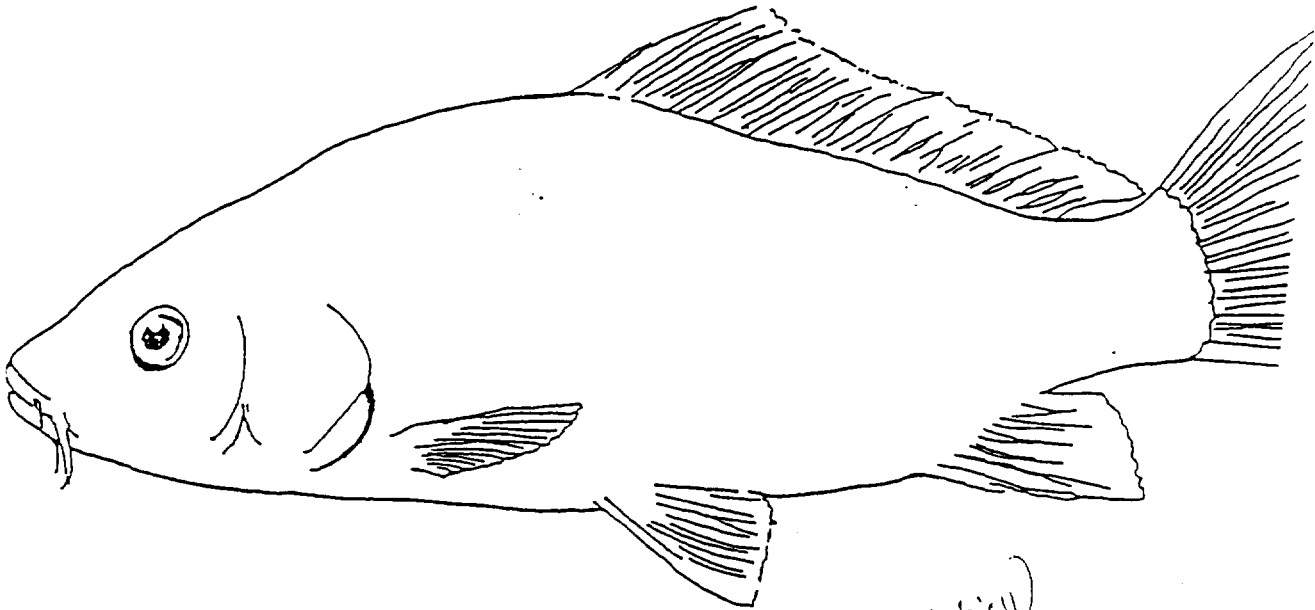
Collection Site _____

Weight _____

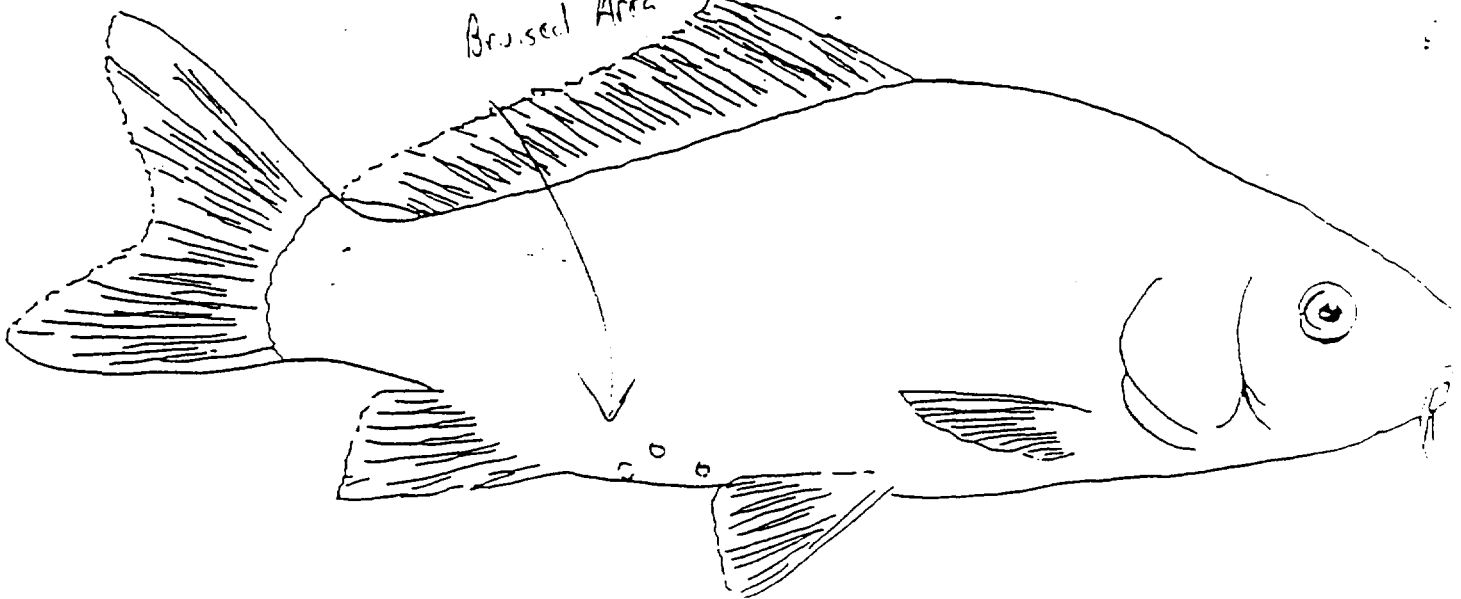
Collection Method _____

Photographs: ☒ Yes ☐ No ^{Roll #3} Frame No(s). 20 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



Contusions
Bruised Area (Prob. from Live Well)



ATTACHMENT A-3

CARP FISH CONDITION SURVEY FORM

Species _____

Fish No (s). 1 < 40572

Collection Date _____

Length _____

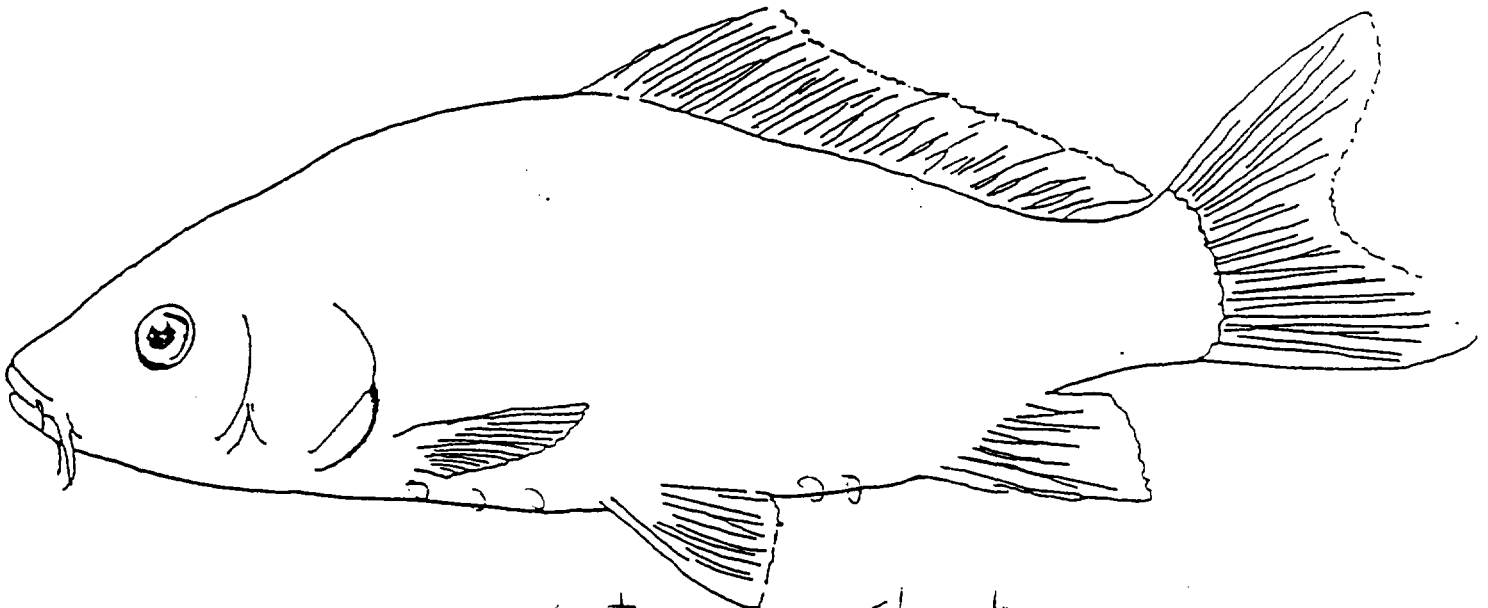
Collection Site _____

Weight _____

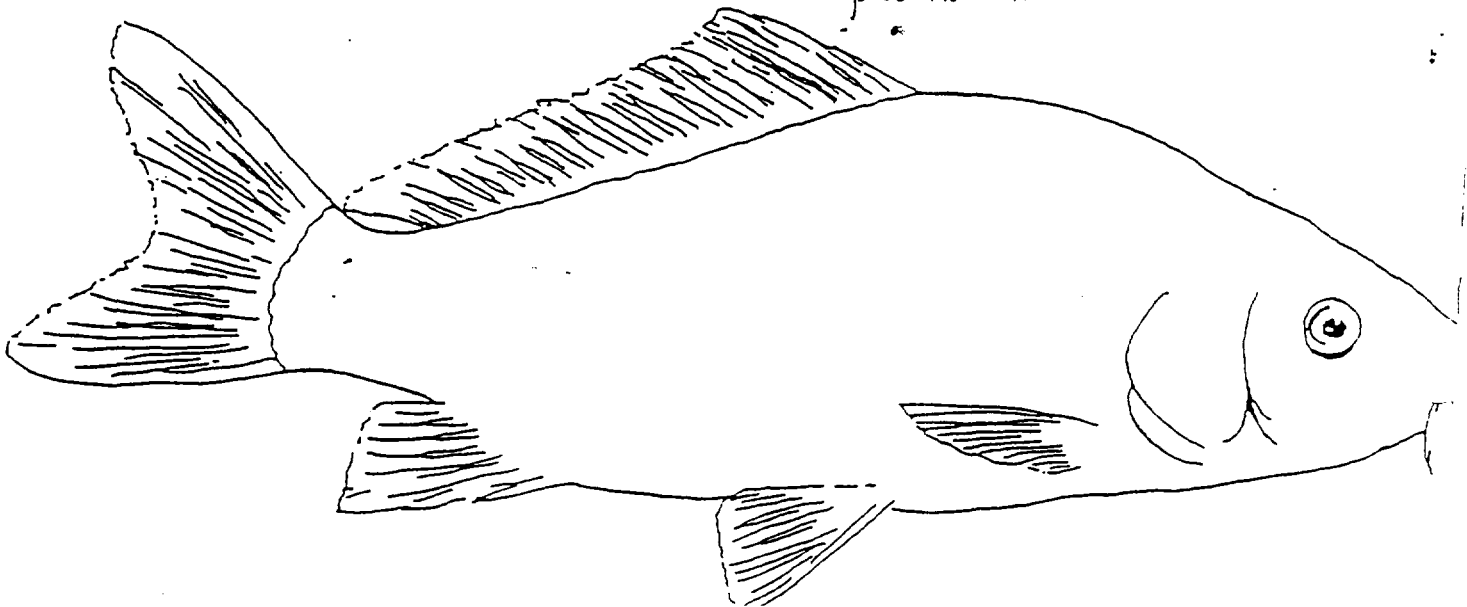
Collection Method _____

Photographs: Yes No ^{Roll #3} Frame No(s). 21 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



contusions on stomach
prob from live well



ATTACHMENT A-3

CARP FISH CONDITION SURVEY FORM

Species _____

Fish No (s). K 40573

Collection Date _____

Length _____

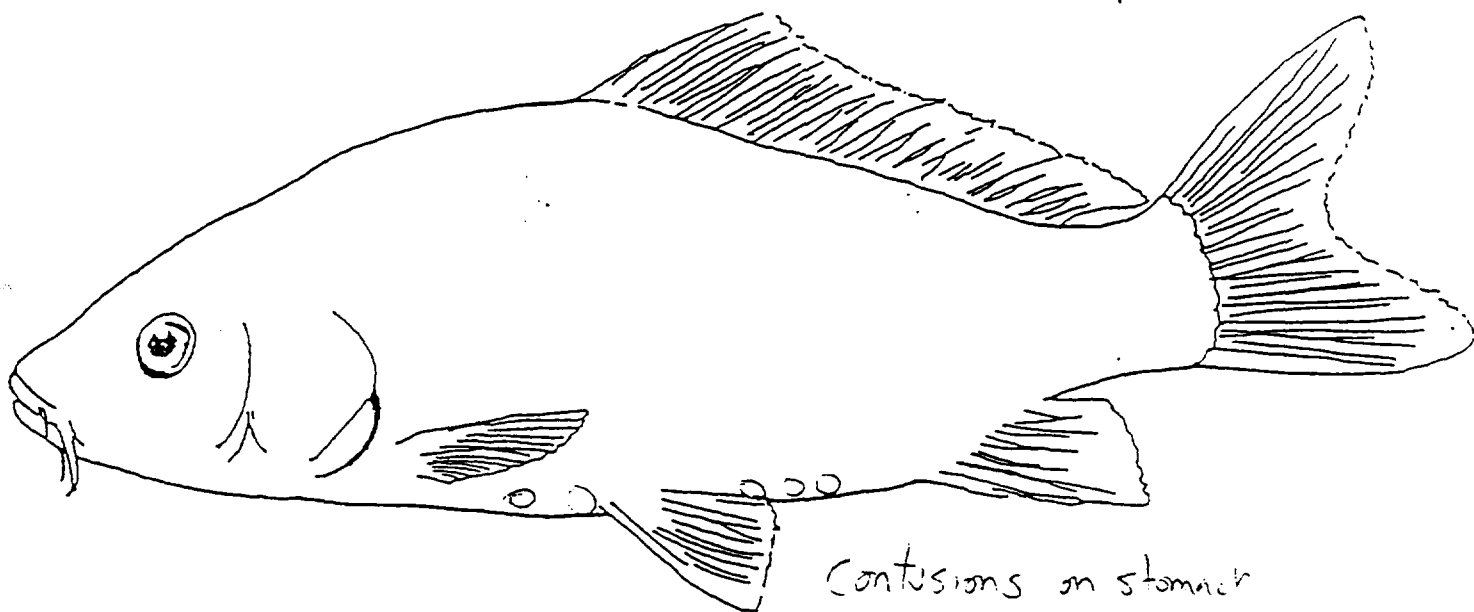
Collection Site _____

Weight _____

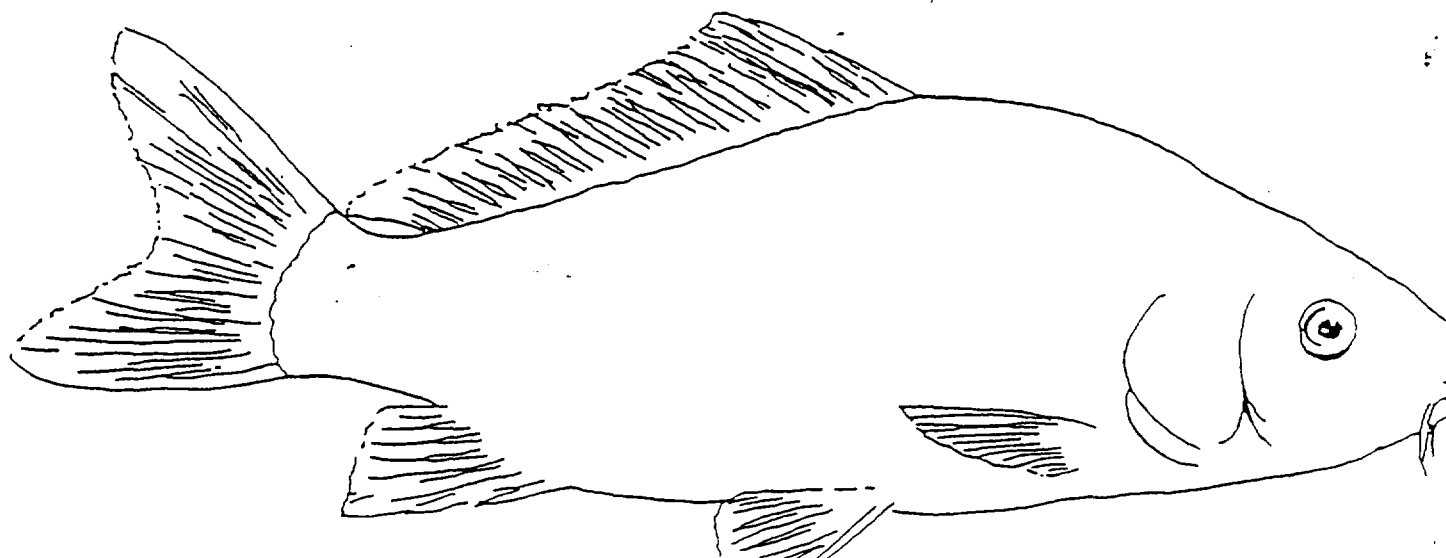
Collection Method _____

Photographs: Yes No ^{R11#3} Frame No(s). 22 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



Contusions on stomach
from live well



ATTACHMENT A-3

CARP FISH CONDITION SURVEY FORM

Species _____

Fish No (s). K 4557-1

Collection Date _____

Length _____

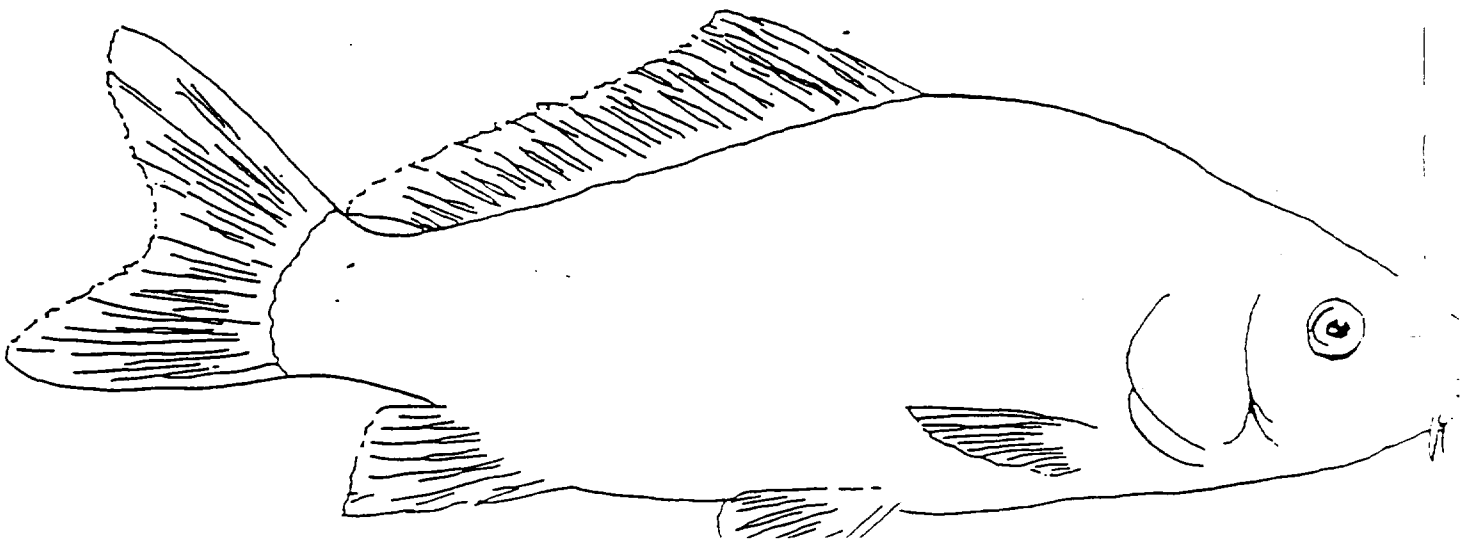
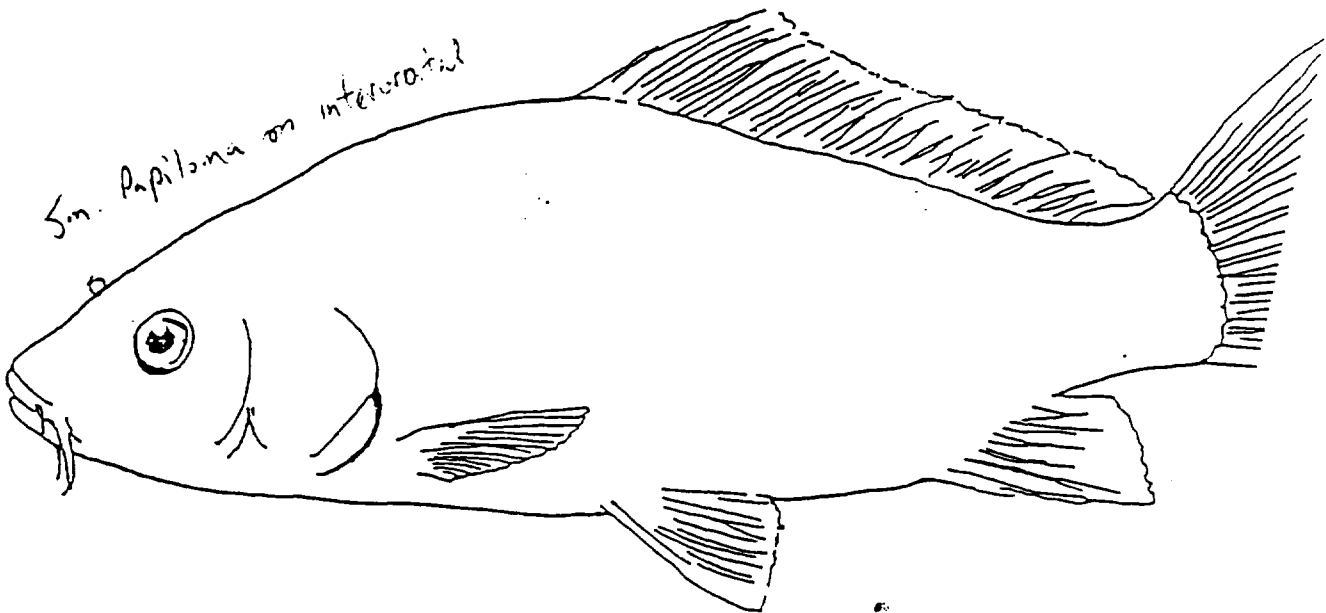
Collection Site _____

Weight _____

Collection Method _____

Photographs: Yes ☒ No ☐ Frame No(s). 23 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



ATTACHMENT A-3

CARP FISH CONDITION SURVEY FORM

Species _____

Fish No (s). K40592

Collection Date _____

Length _____

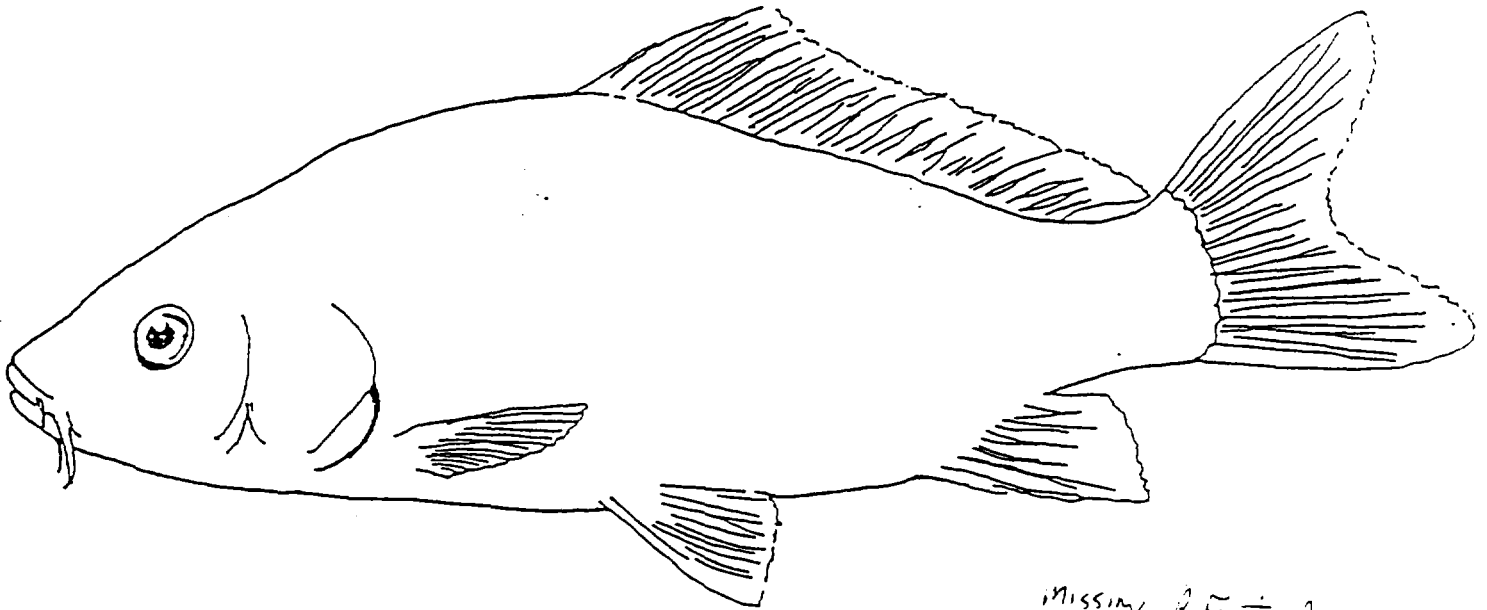
Collection Site _____

Weight _____

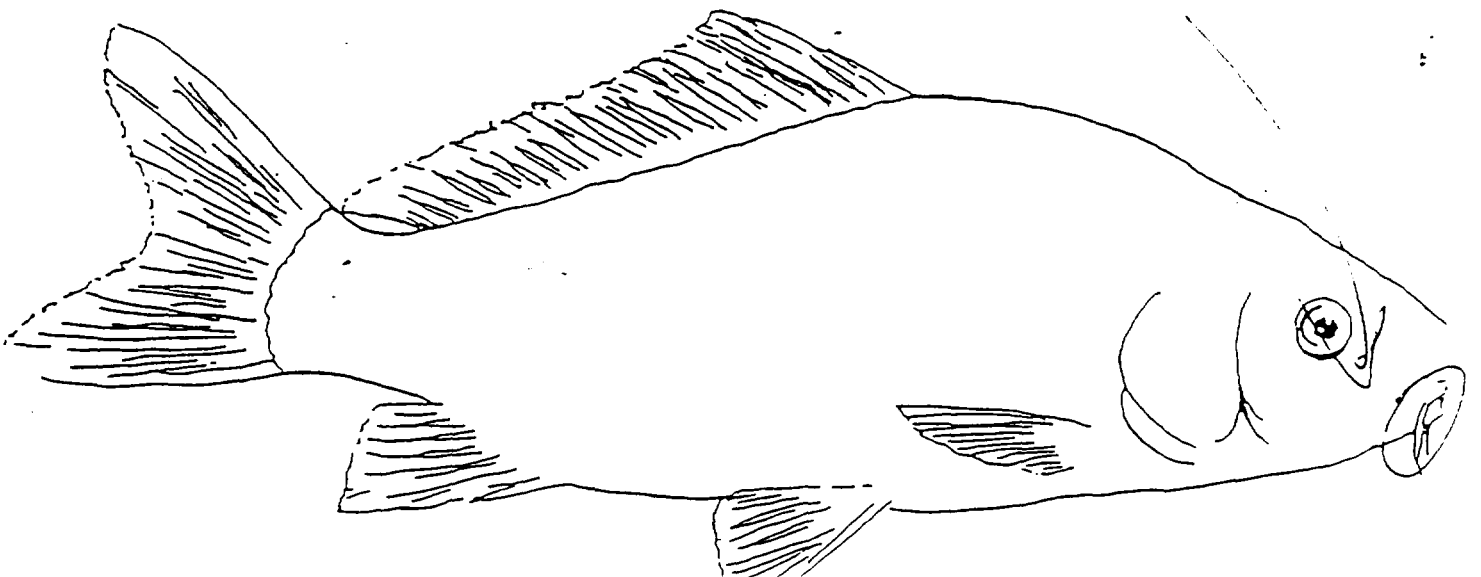
Collection Method _____

Photographs: Yes ^{R11 #4} No Frame No(s). 6 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



Missing R. Fin Barbel



ATTACHMENT A-3

CARP FISH CONDITION SURVEY FORM

Species _____

Fish No (s). K40640

Collection Date _____

Length _____

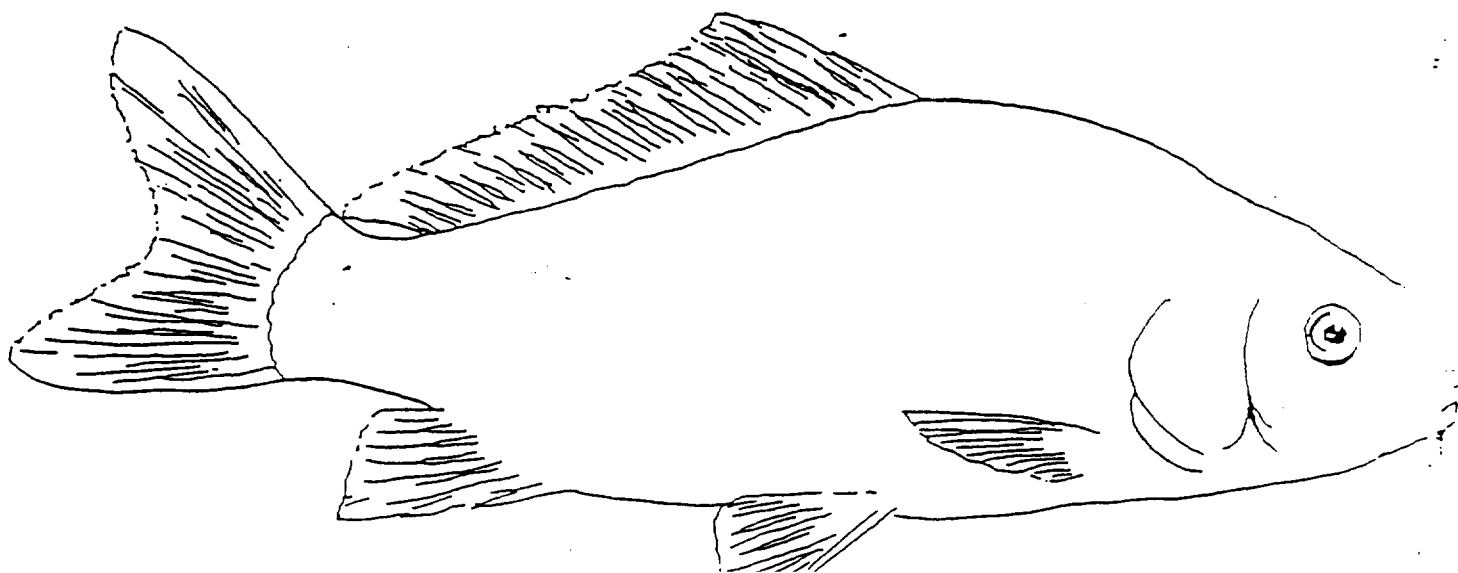
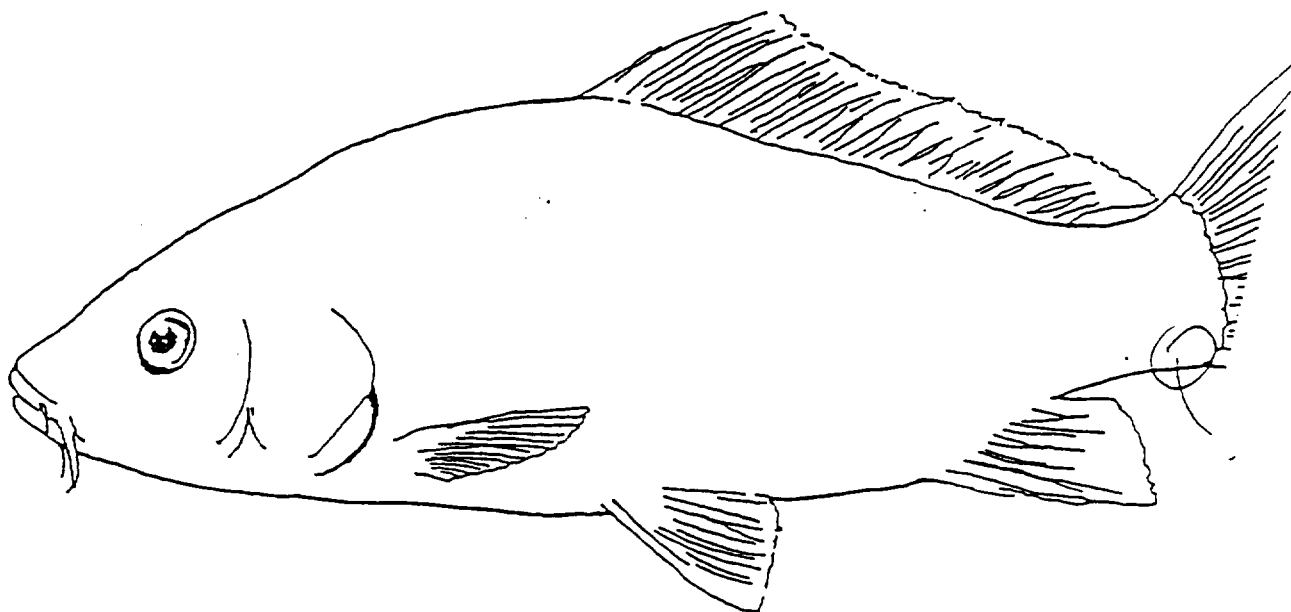
Collection Site _____

Weight _____

Collection Method _____

Photographs Yes ^{Rail #6} No Frame No(s). 1 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



Attachment A-4

Pass Fish Condition Survey Form

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

ATTACHMENT A-4

BASS FISH CONDITION SURVEY FORM

Species Adult Sm Bass

Fish No (s). 1540500

Collection Date _____

Length _____

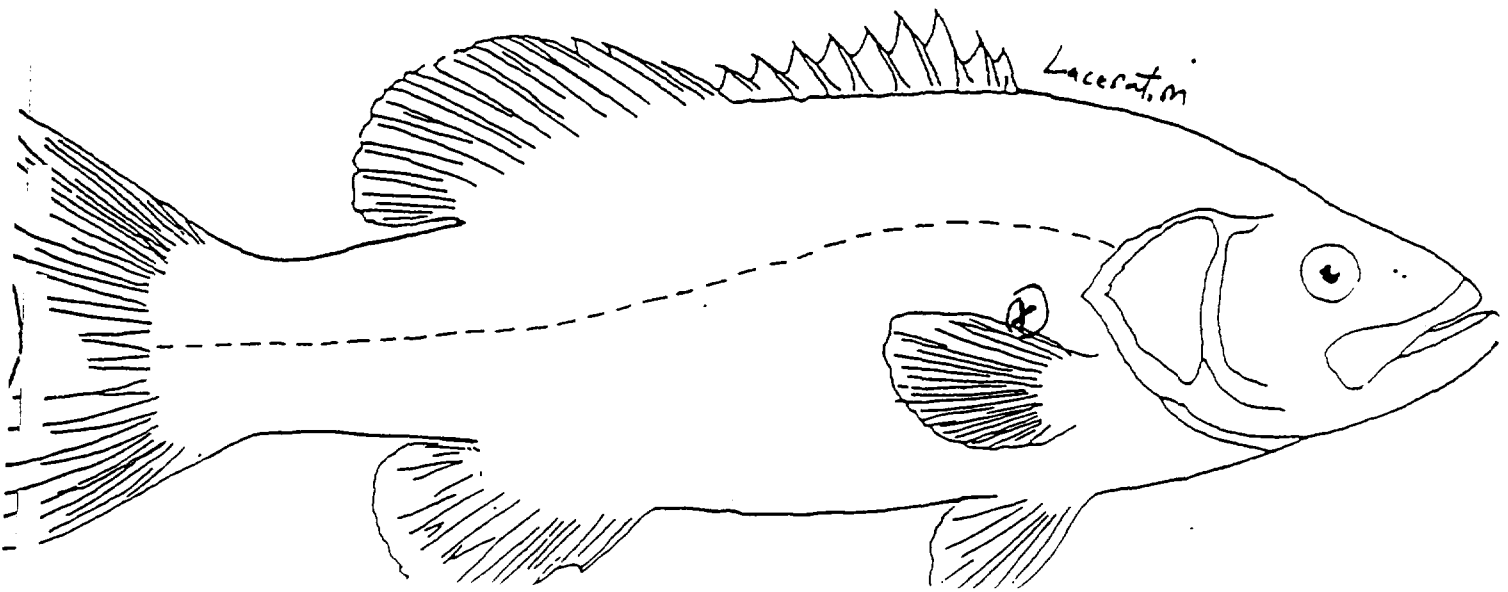
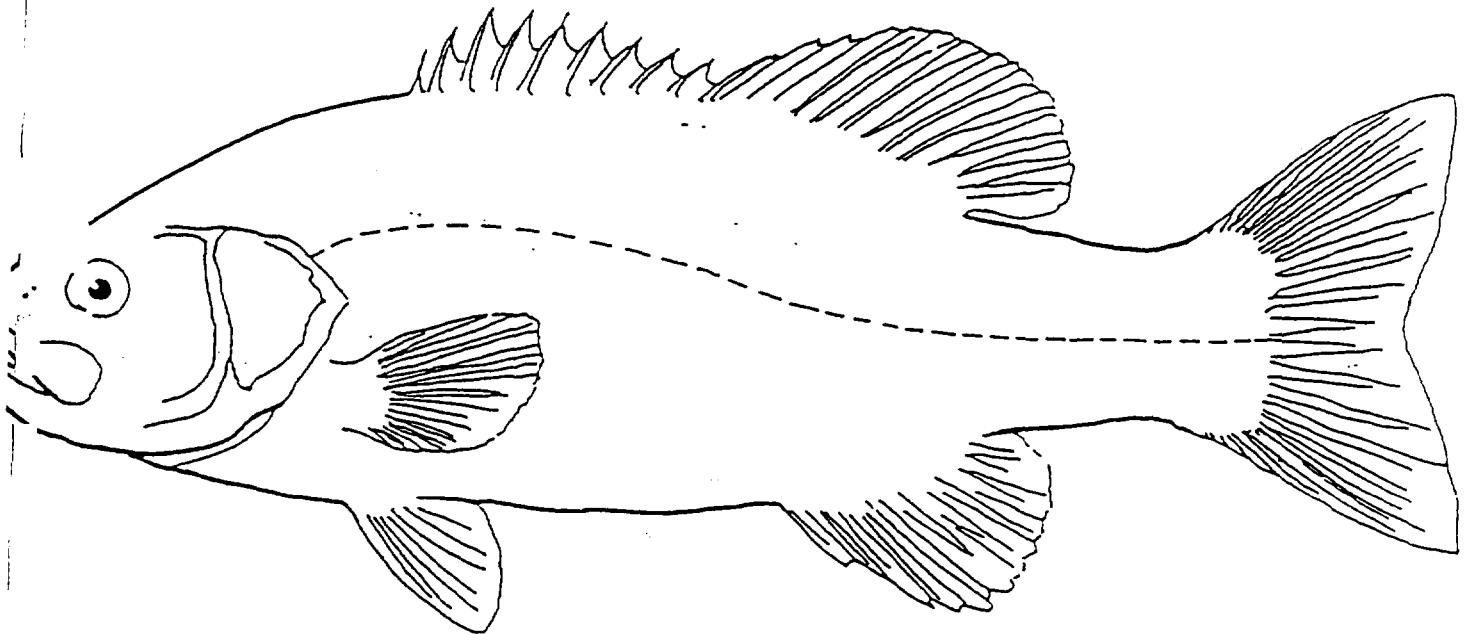
Collection Site _____

Weight _____

Collection Method _____

Photographs: Yes No Frame No(s). Rail, Fil Description Rel. w

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



ATTACHMENT A-4

BASS FISH CONDITION SURVEY FORM

Species _____ Fish No (s). K 40590

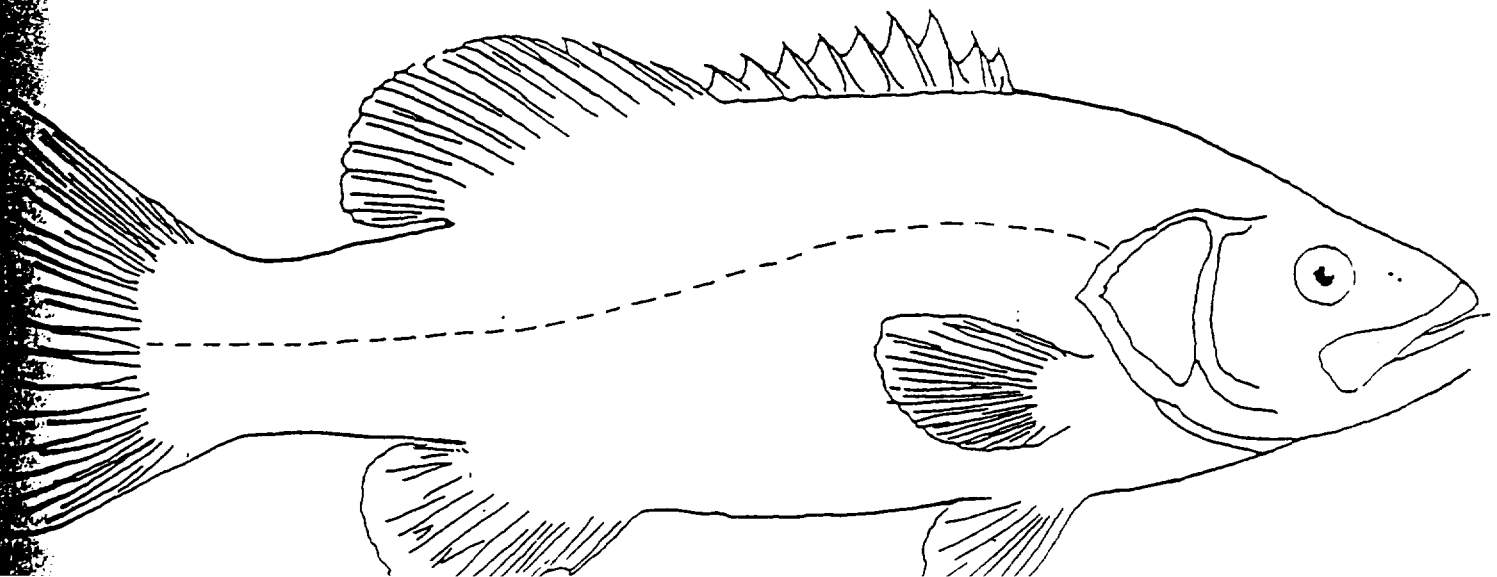
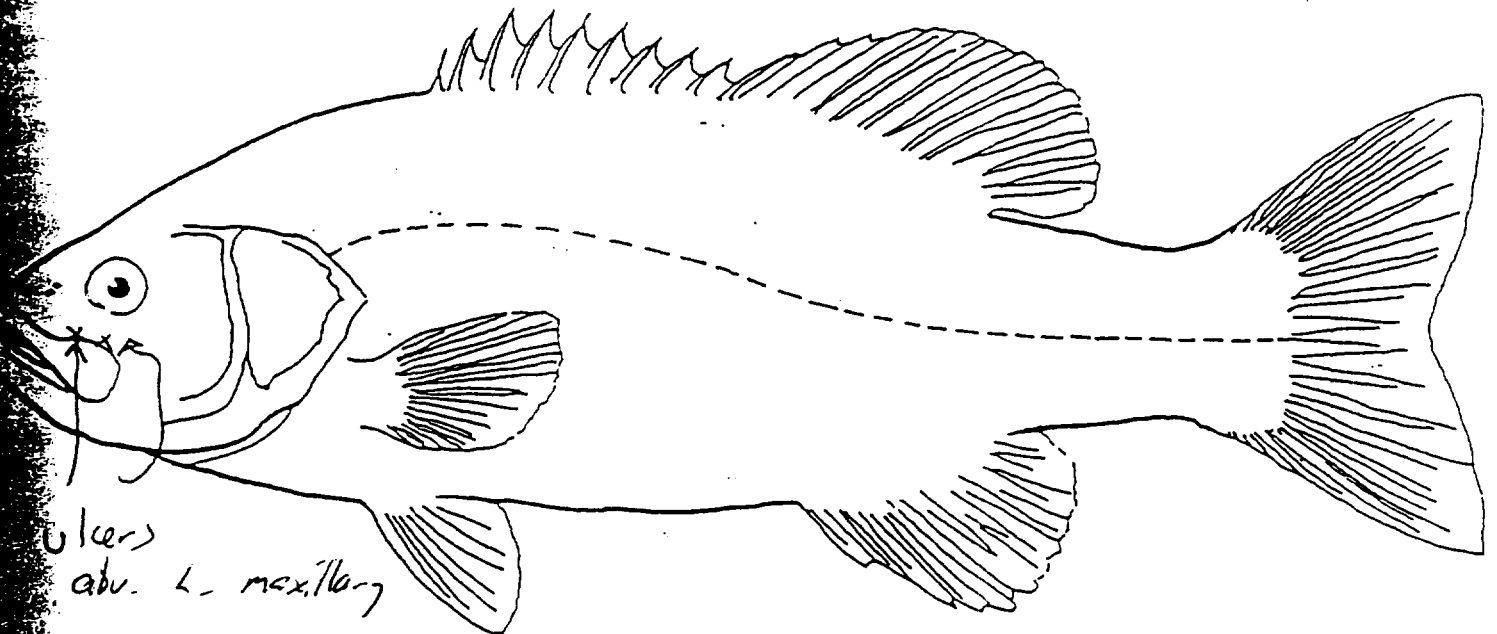
Collection Date _____ Length _____

Collection Site _____ Weight _____

Collection Method _____

Photographs: Yes No ^{cell 2} Frame No(s). 13 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



ATTACHMENT A-4

BASS FISH CONDITION SURVEY FORM

Species _____

Fish No (s). K90542

Collection Date _____

Length _____

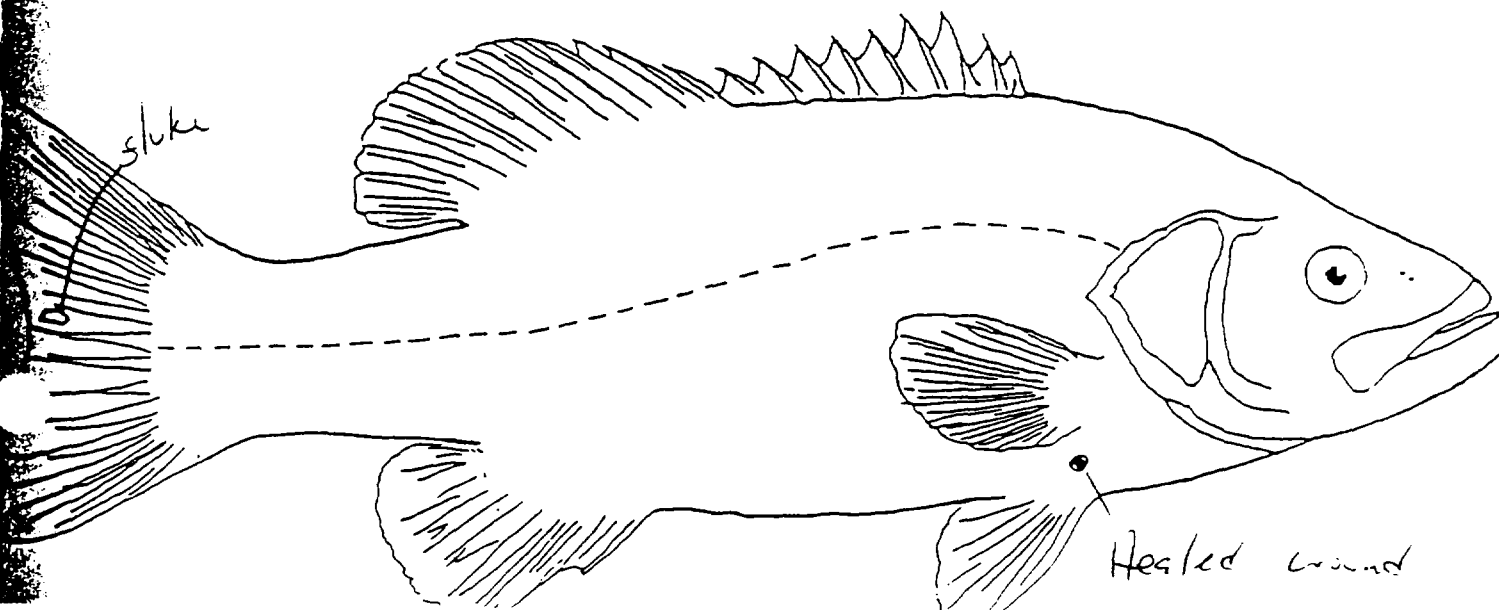
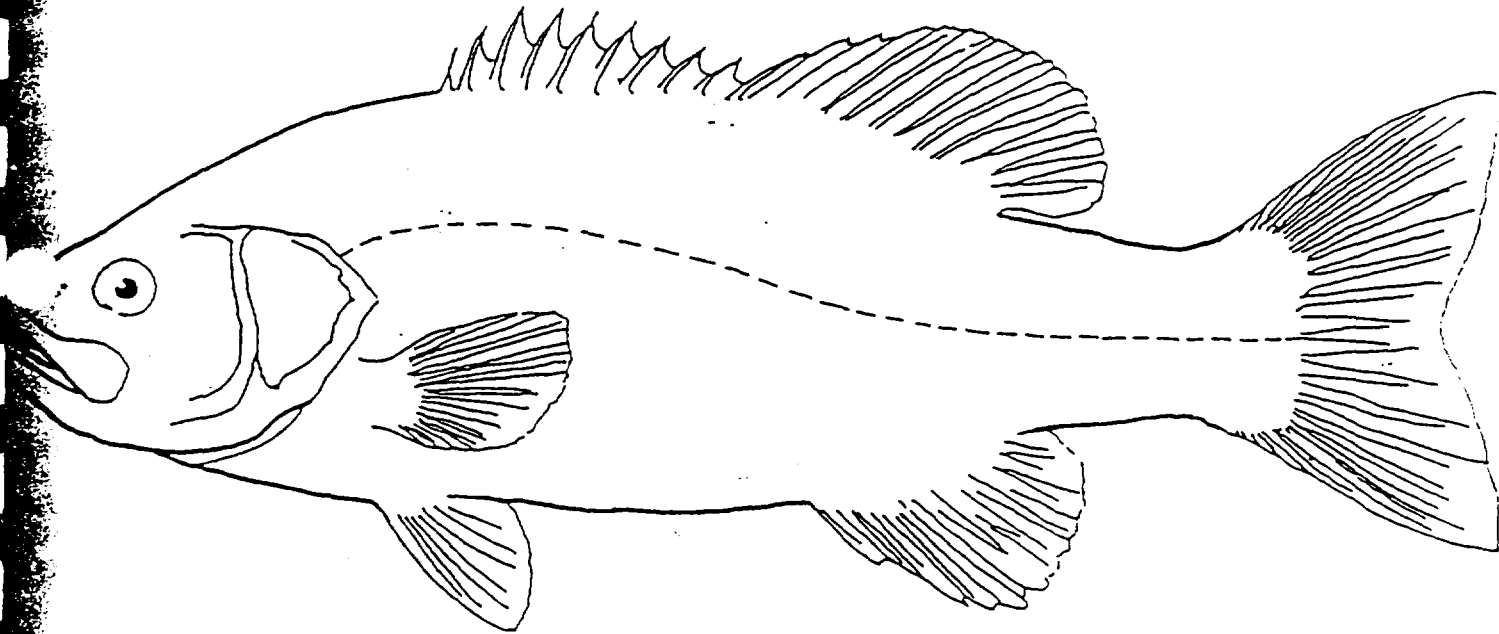
Collection Site _____

Weight _____

Collection Method _____

Photographs: Yes No ^{Rd1#2} Frame No(s). 15 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



ATTACHMENT A-4

BASS FISH CONDITION SURVEY FORM

Species _____

Fish No (s). K40545

Collection Date _____

Length _____

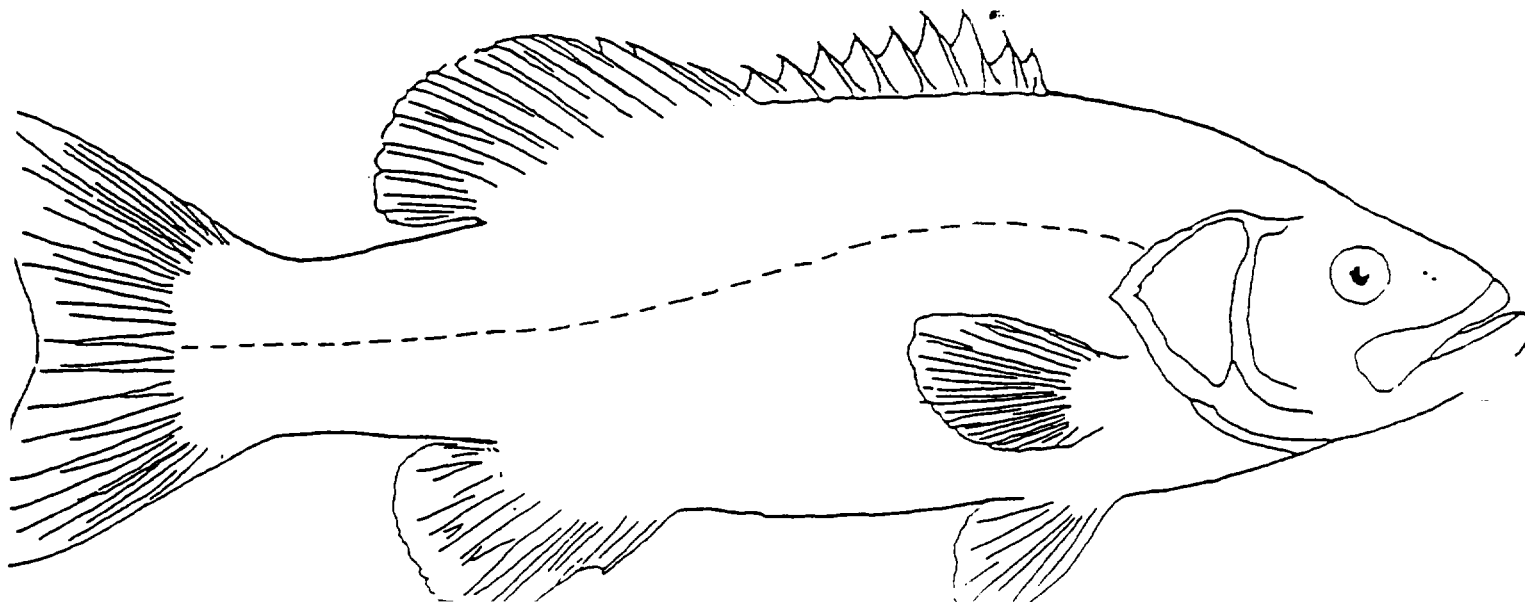
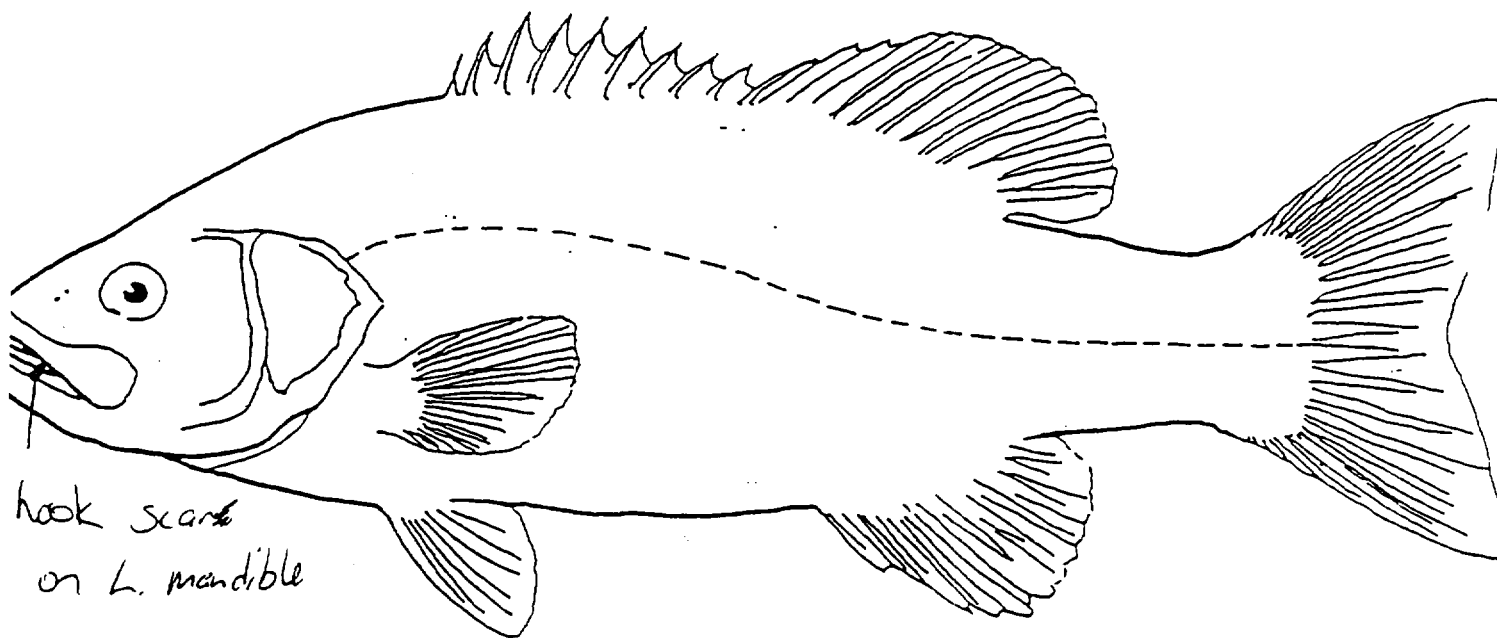
Collection Site _____

Weight _____

Collection Method _____

Photographs: Roll #2
☒ Yes ☐ No Frame No(s). 18 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



ATTACHMENT A-4

BASS FISH CONDITION SURVEY FORM

Species _____

Fish No (s). K40559

Collection Date _____

Length _____

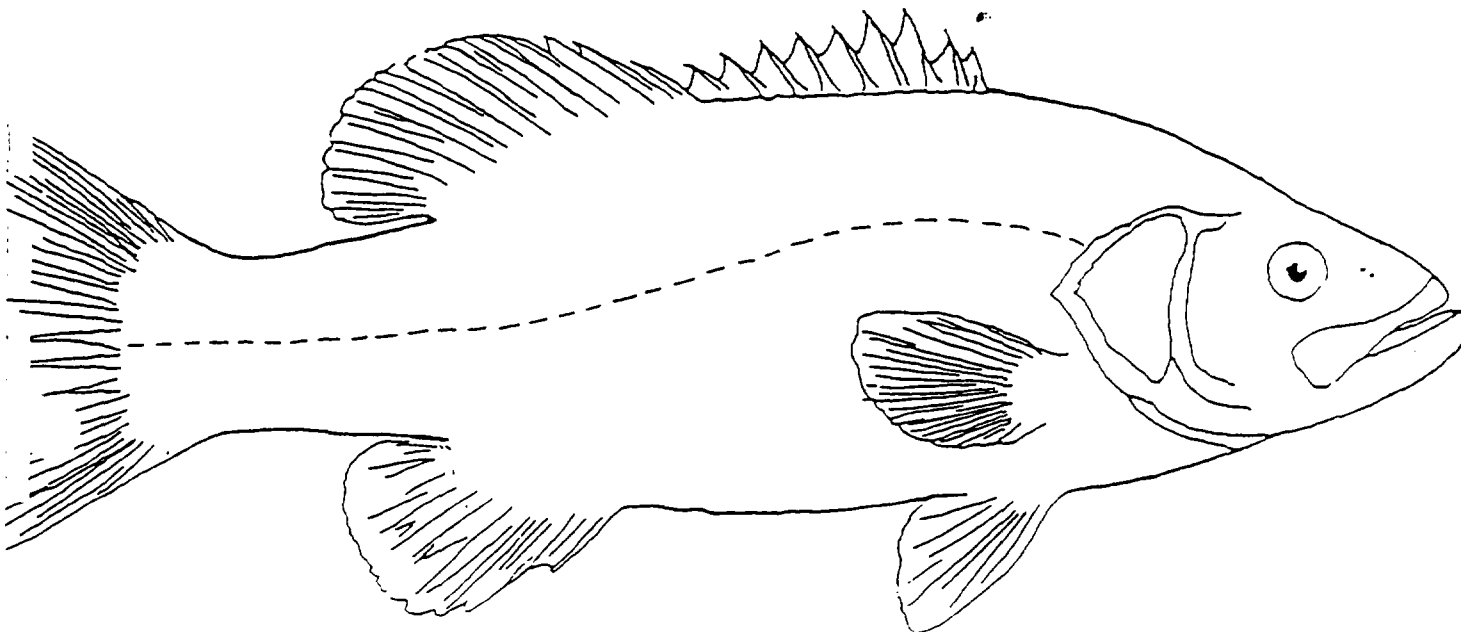
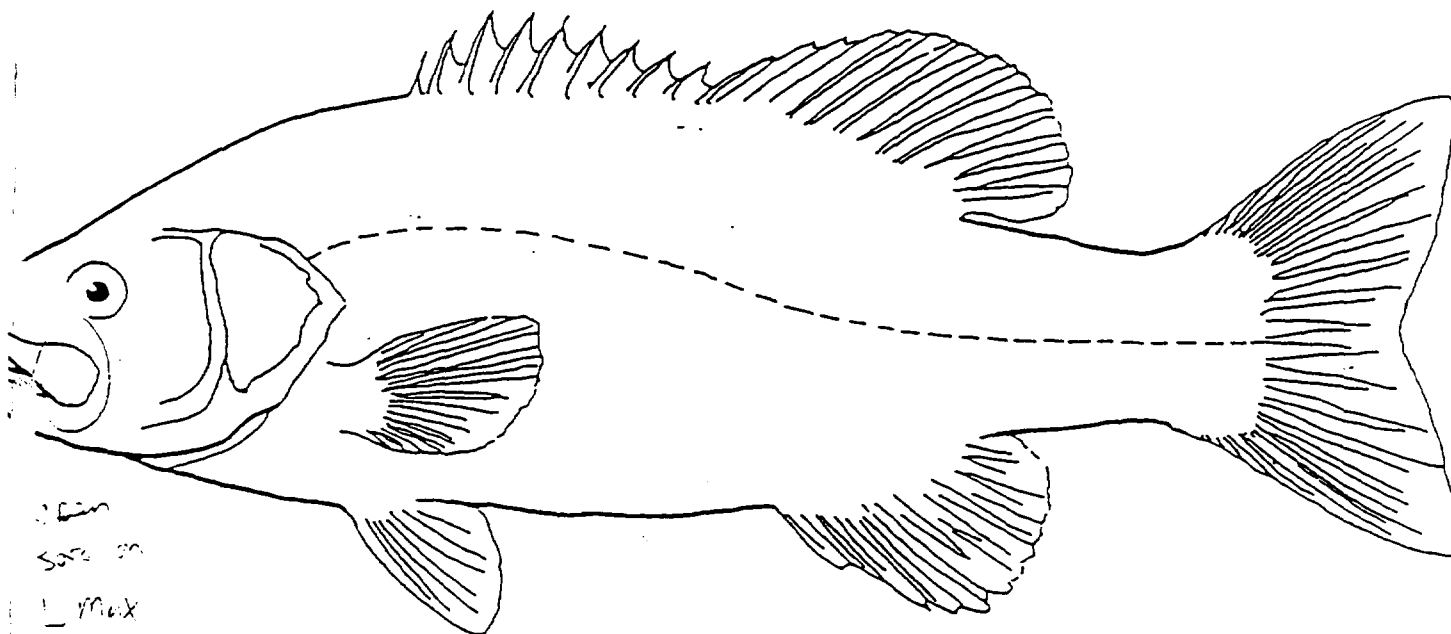
Collection Site _____

Weight _____

Collection Method _____

Photographs: Yes ³ No Frame No(s). 8 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



ATTACHMENT A-4

BASS FISH CONDITION SURVEY FORM

Species _____

Fish No (s). 1840566-C

Collection Date _____

Length _____

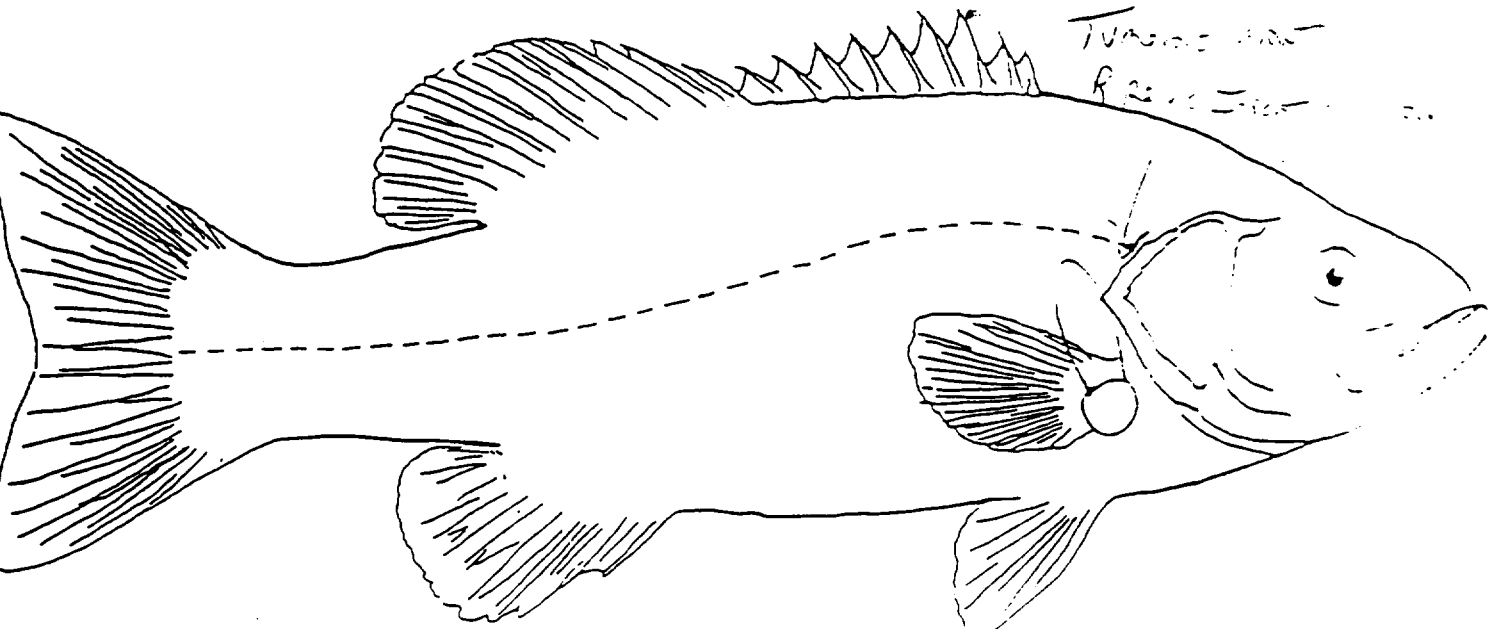
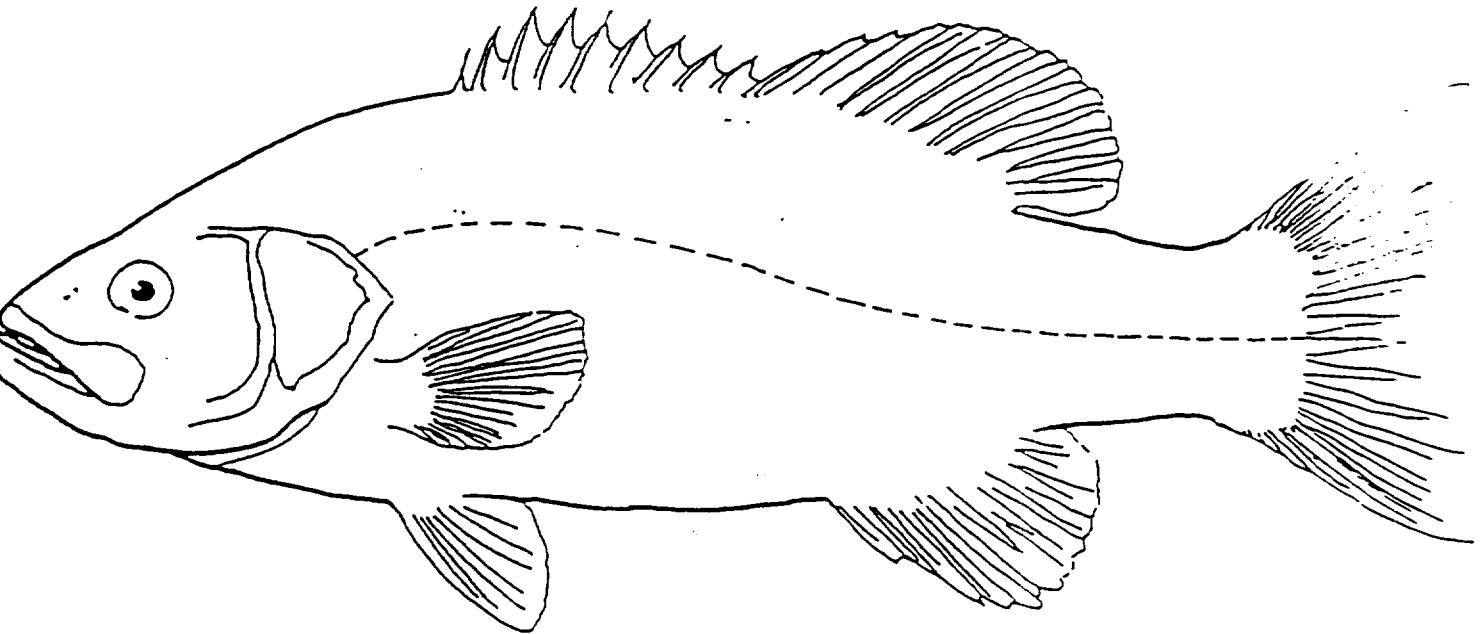
Collection Site _____

Weight _____

Collection Method _____

Photographs: Yes ^{RJ1 #3} No Frame No(s). 13 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



ATTACHMENT A-4

BASS FISH CONDITION SURVEY FORM

Species _____

Fish No (s). 240575

Collection Date _____

Length _____

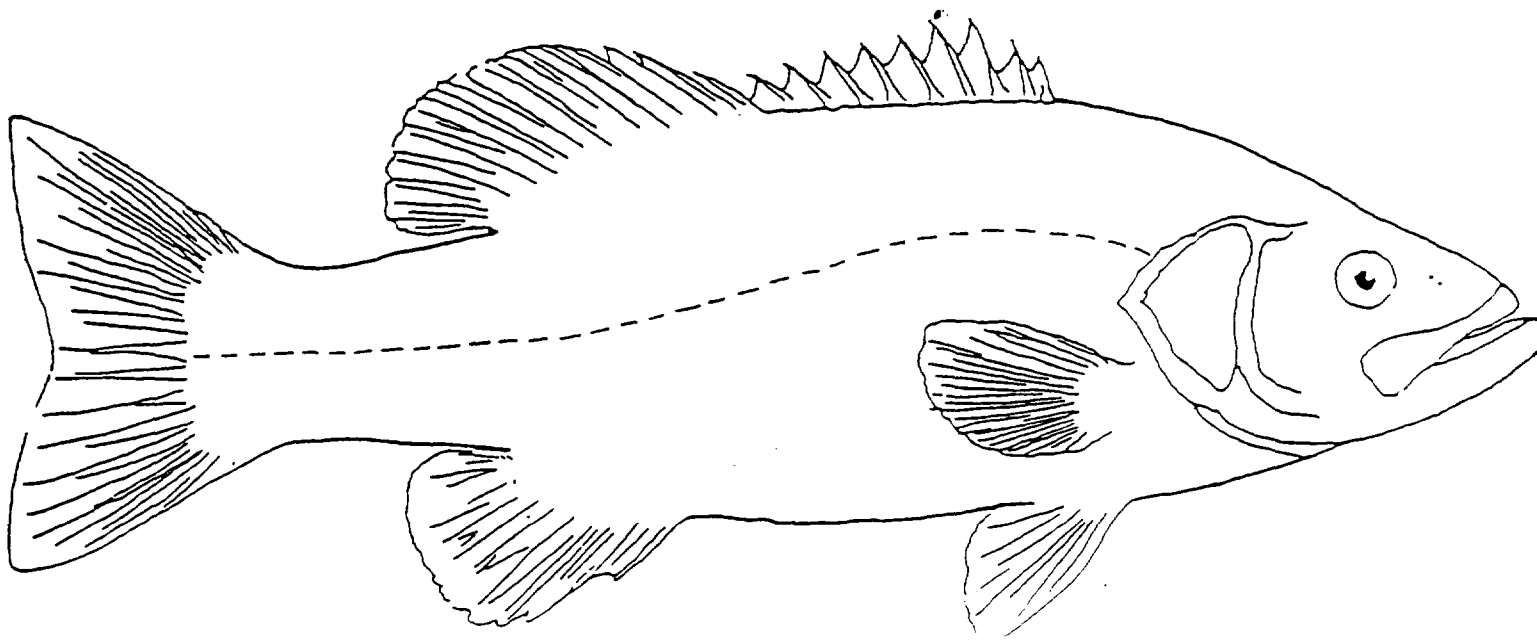
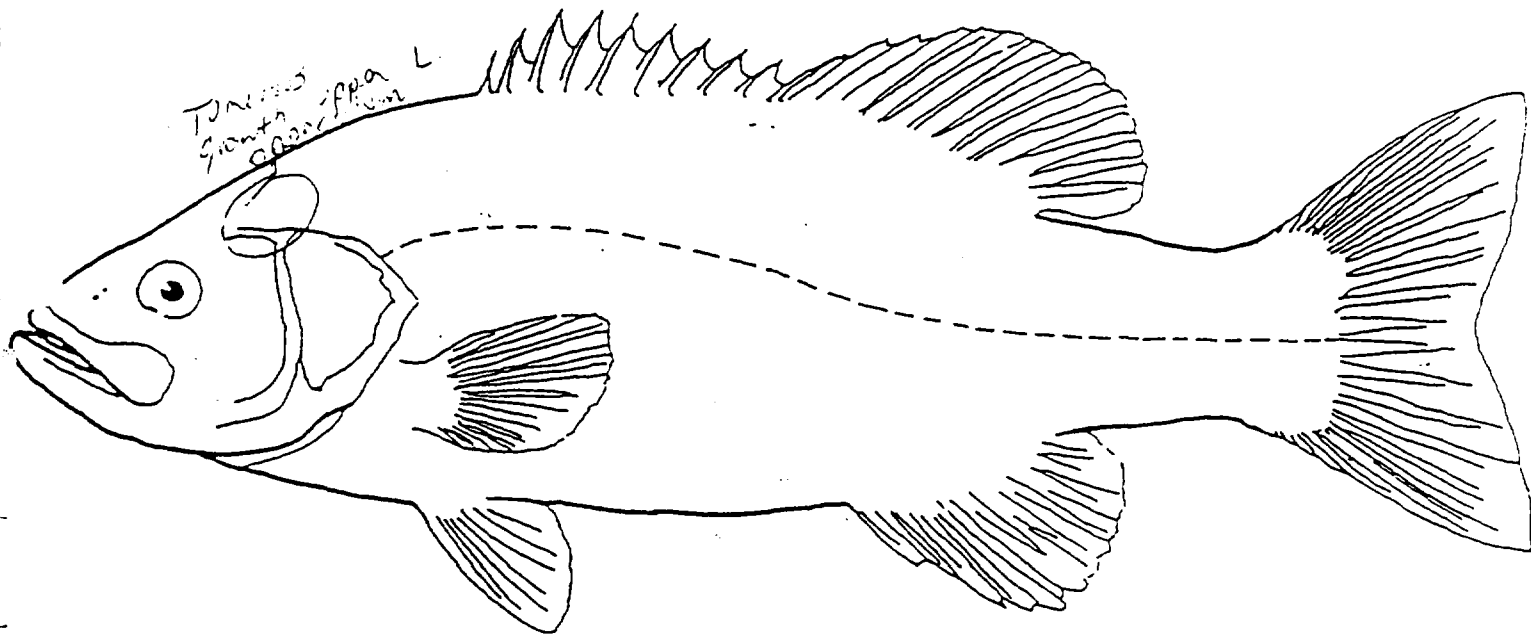
Collection Site _____

Weight _____

Collection Method _____

Photographs: Yes No ^{Rail=3} Frame No(s). 24 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



ATTACHMENT A-4

BASS FISH CONDITION SURVEY FORM

Species _____

Fish No (s). 14576

Collection Date _____

Length _____

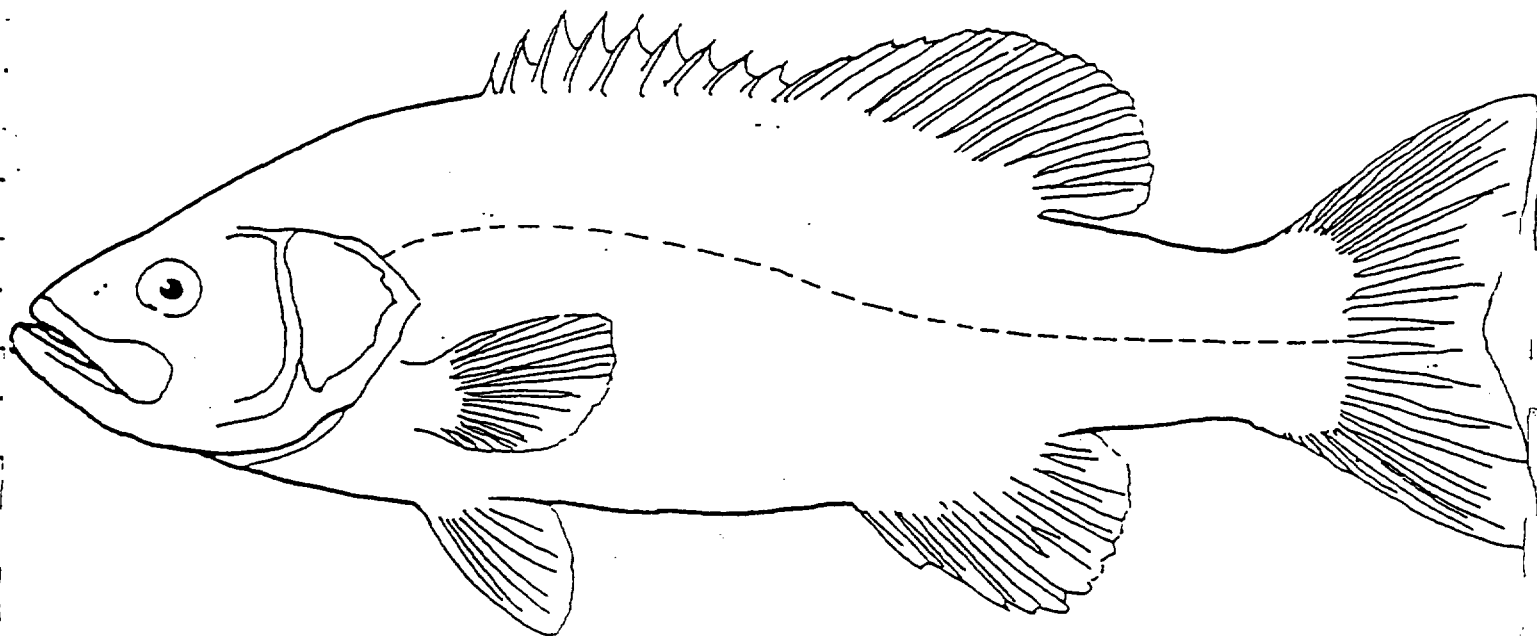
Collection Site _____

Weight _____

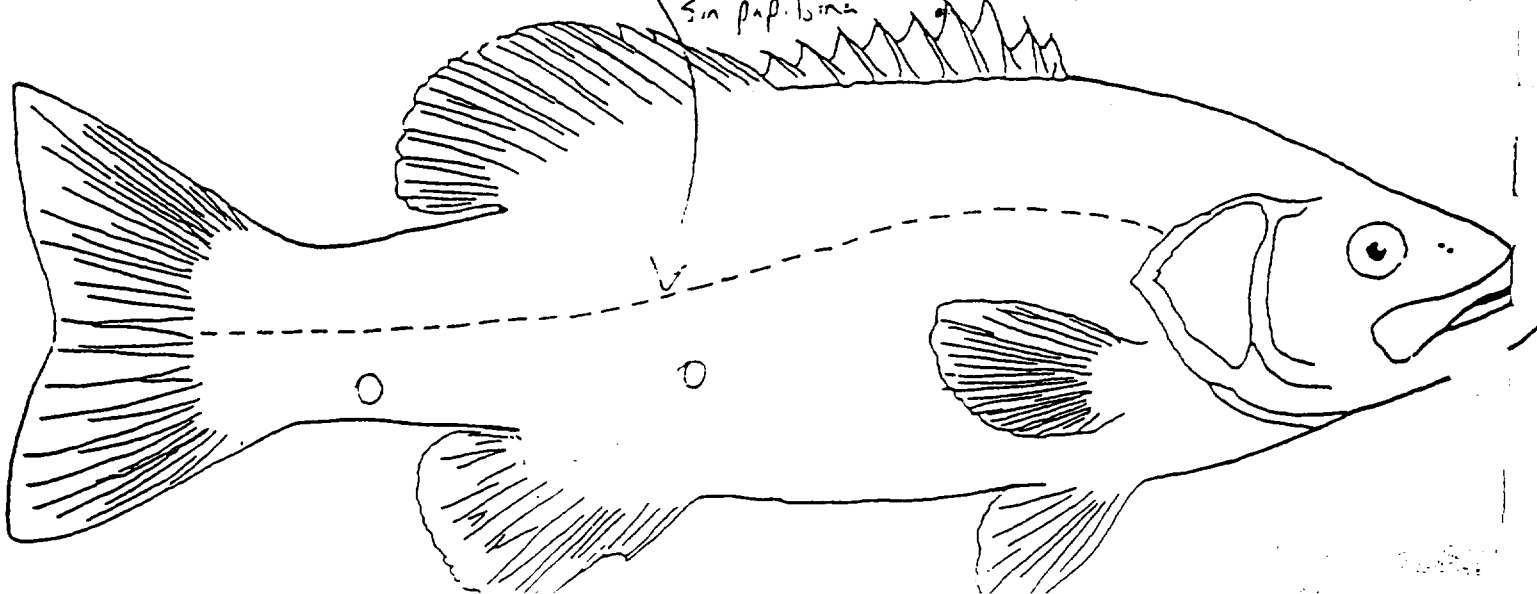
Collection Method _____

Photographs: ☒ Yes ^{Roll #3} No Frame No(s). 25 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



Contusions lower R side in vicinity of anal fin.
sin papilloma



ATTACHMENT A-4

BASS FISH CONDITION SURVEY FORM

Species _____

Fish No (s). K40577

Collection Date _____

Length _____

Collection Site _____

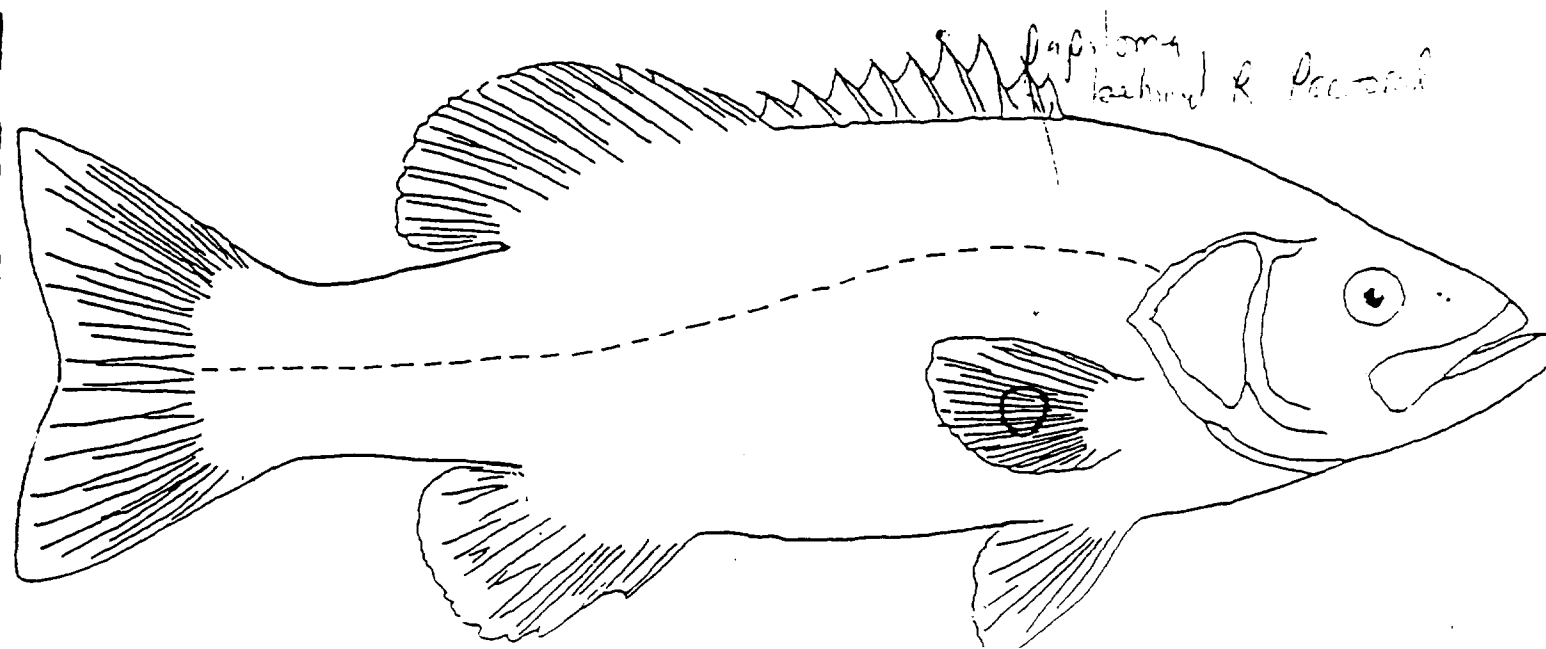
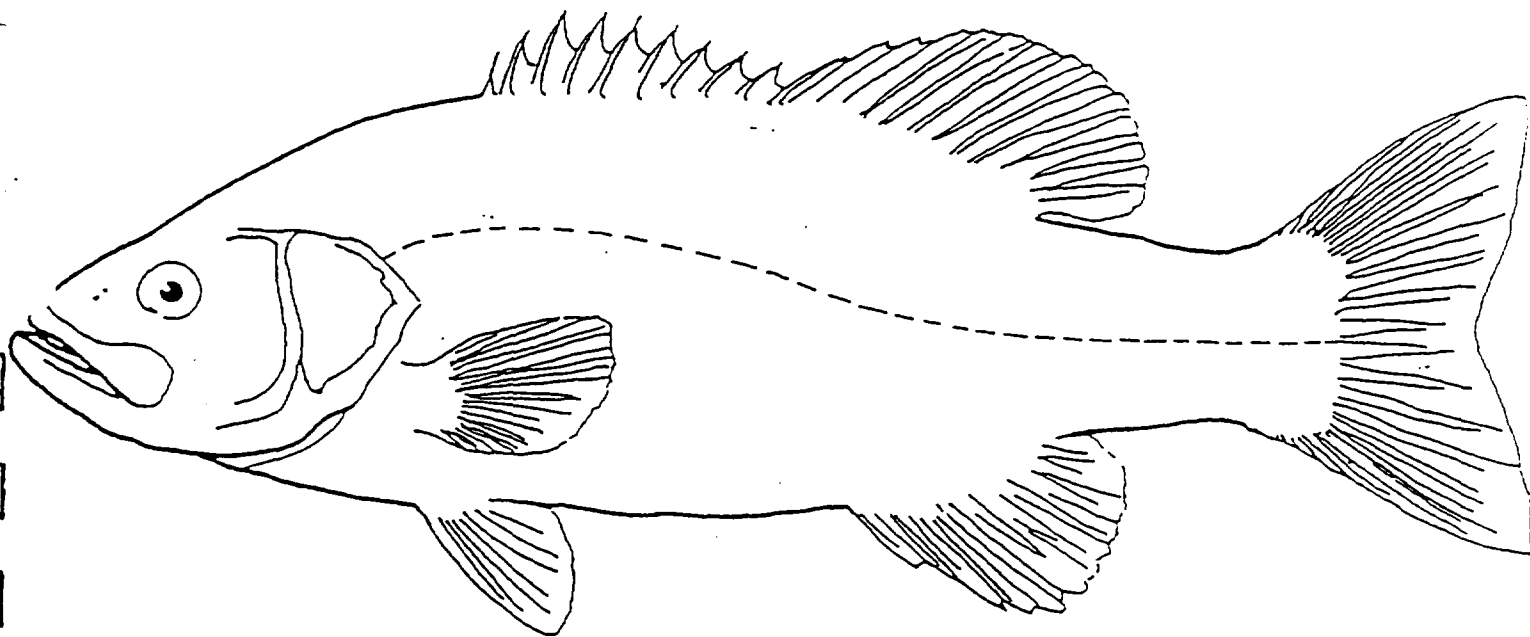
Weight _____

Collection Method _____

Photographs: Yes ^{Roll = 3} No Frame No(s). 26

Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



ATTACHMENT A-4

BASS FISH CONDITION SURVEY FORM

Species _____ Fish No (s). K 40628

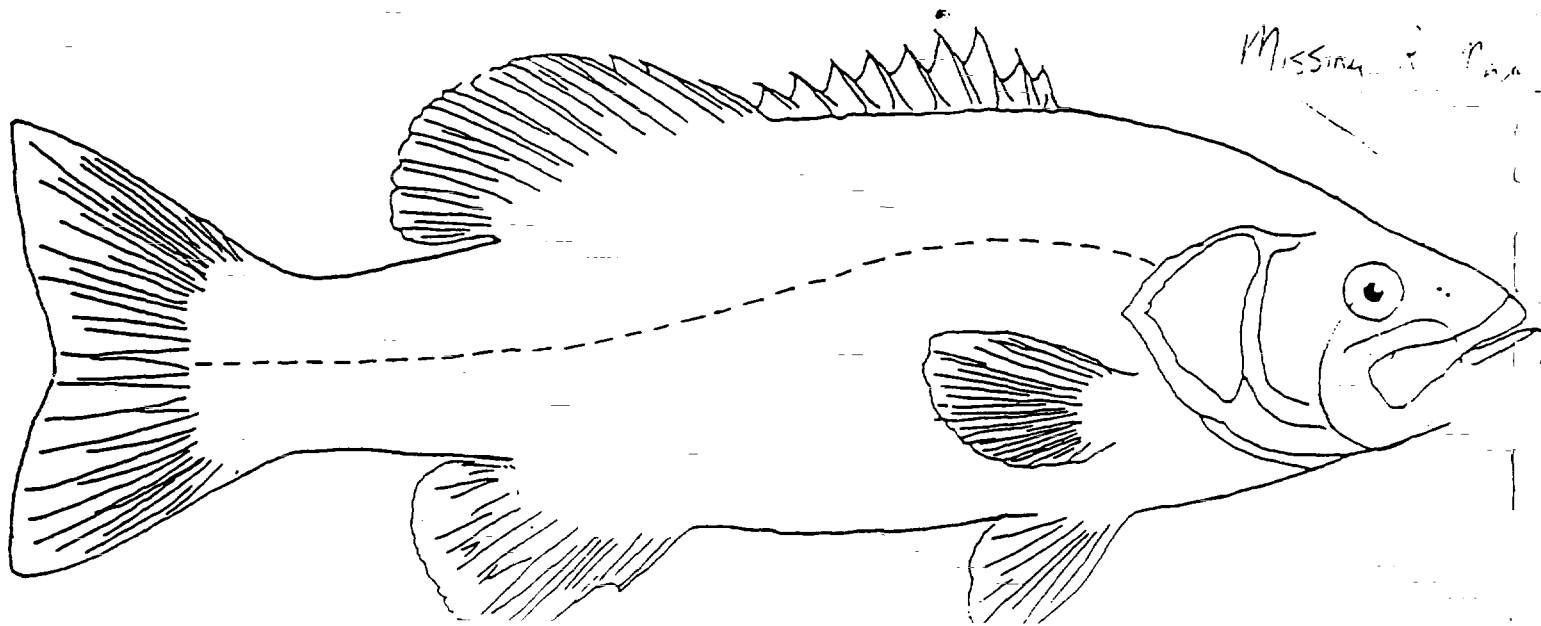
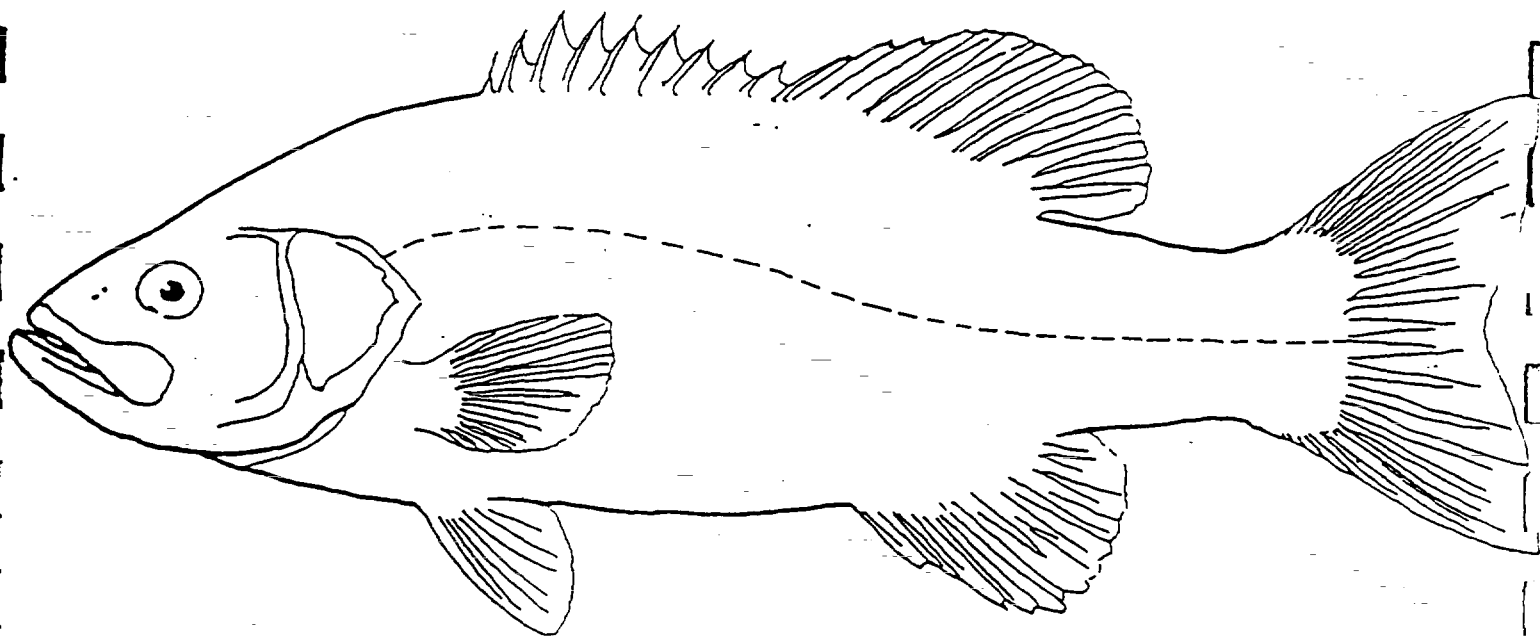
Collection Date _____ Length _____

Collection Site _____ Weight _____

Collection Method _____

Photographs: Yes RII#5 No _____ Frame No(s). 11 Description _____

Age of Fish _____ Spine, Scale, Ray _____ Preserved: Yes No



Appendix B

Photographic Log

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

ABSA #1

CARP

K40640
K40641
K40643
K40644
K40645
K40646
K40647
K40648
K40649
K40650
K40651

ADULT SMALLMOUTH BASS

K40623
K40624
K40625
K40626
K40627
K40628
K40635
K40636
K40637
K40638
K40639

Carp
(*Cyprinus carpio*)

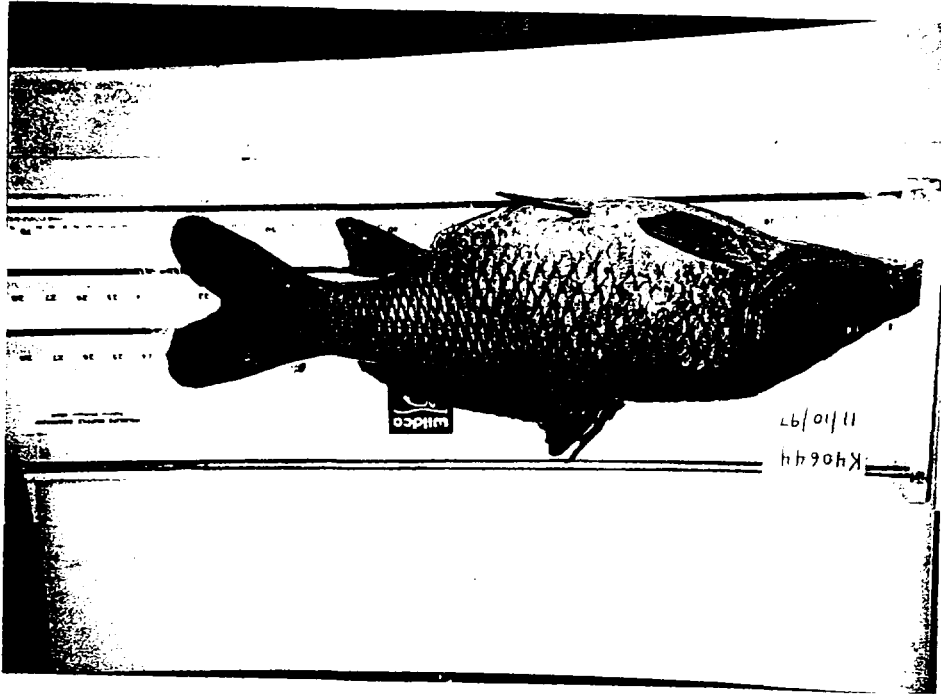


K40640

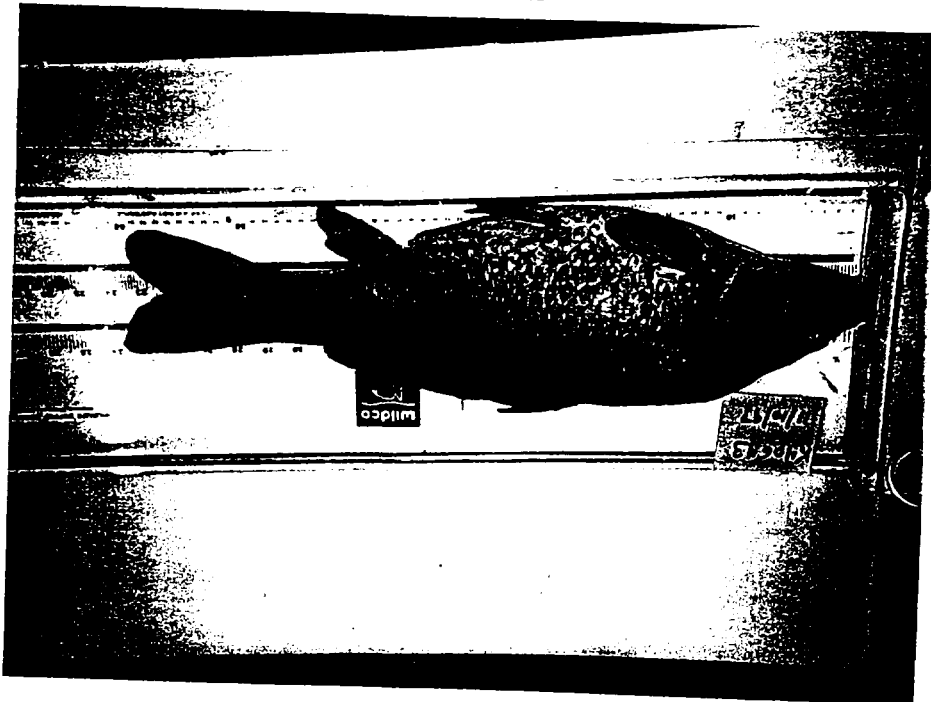


K40641

K40644



K40643

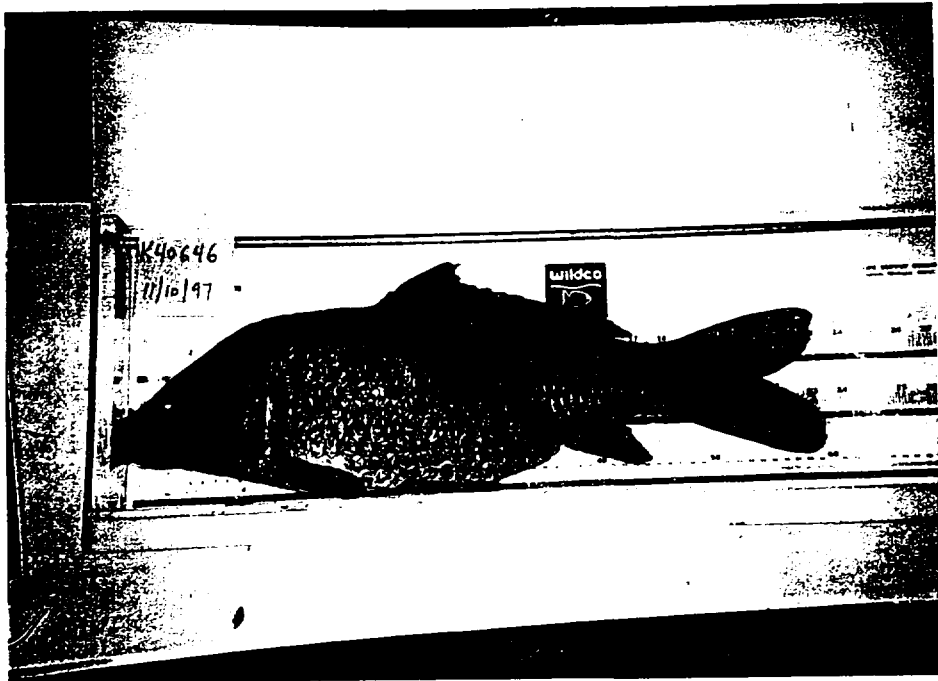




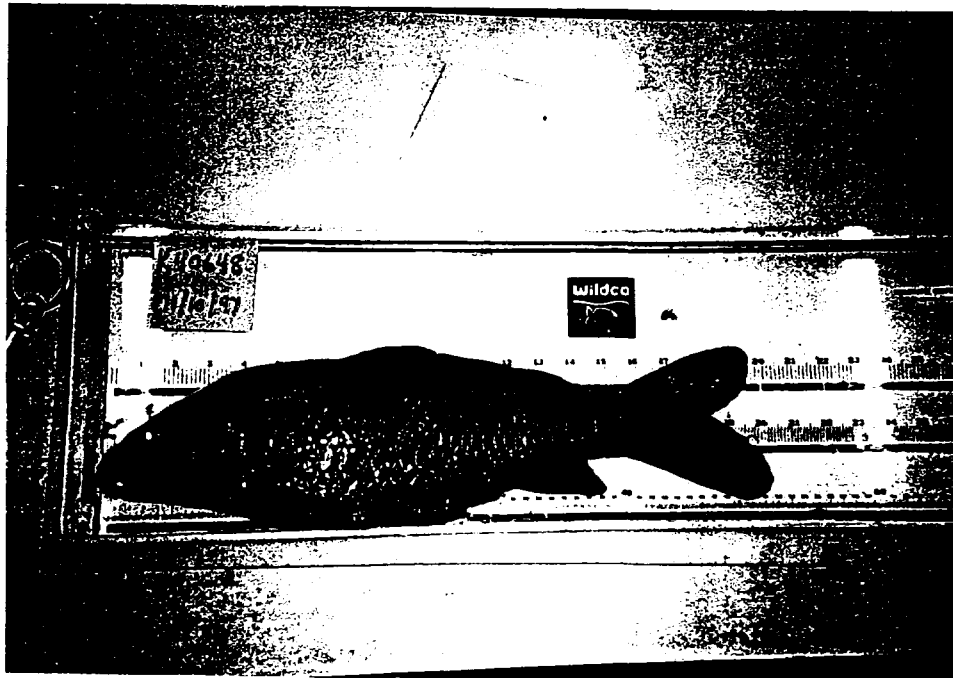
K40645



K40646

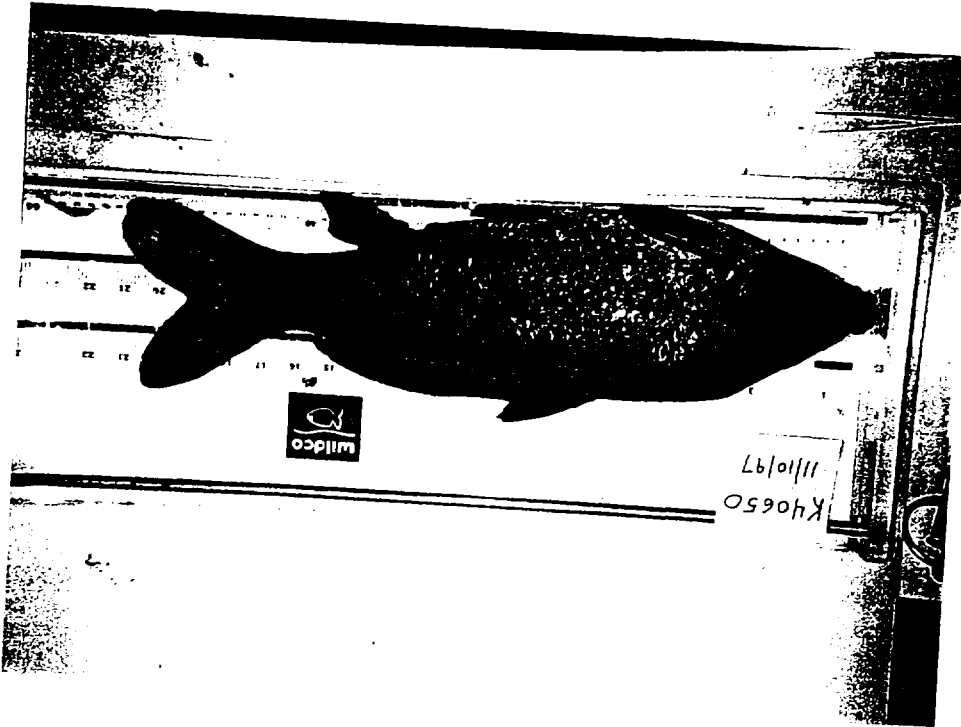


K40647

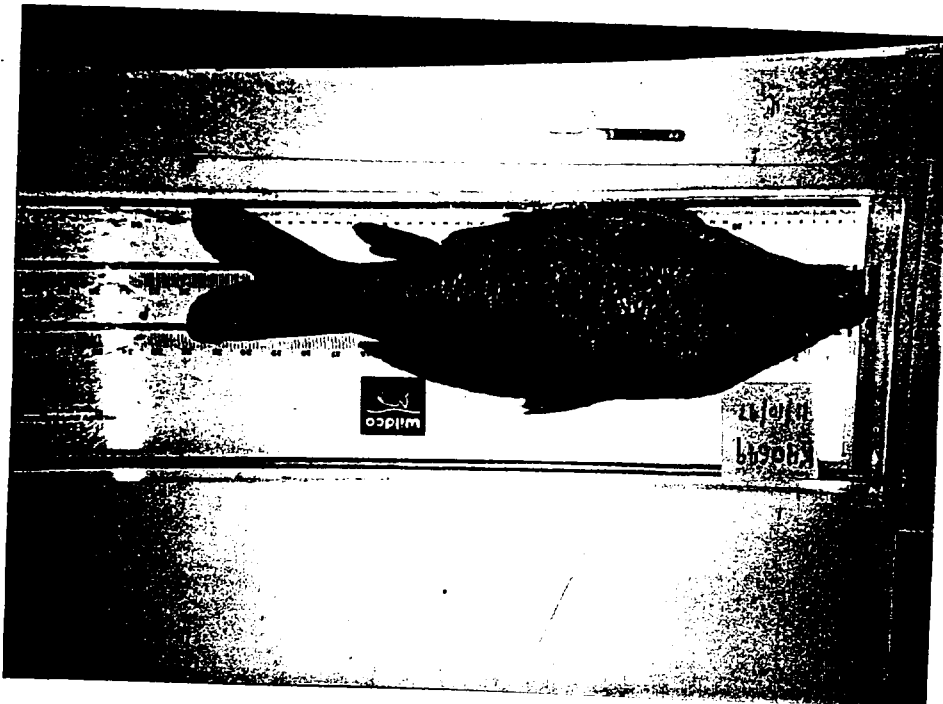


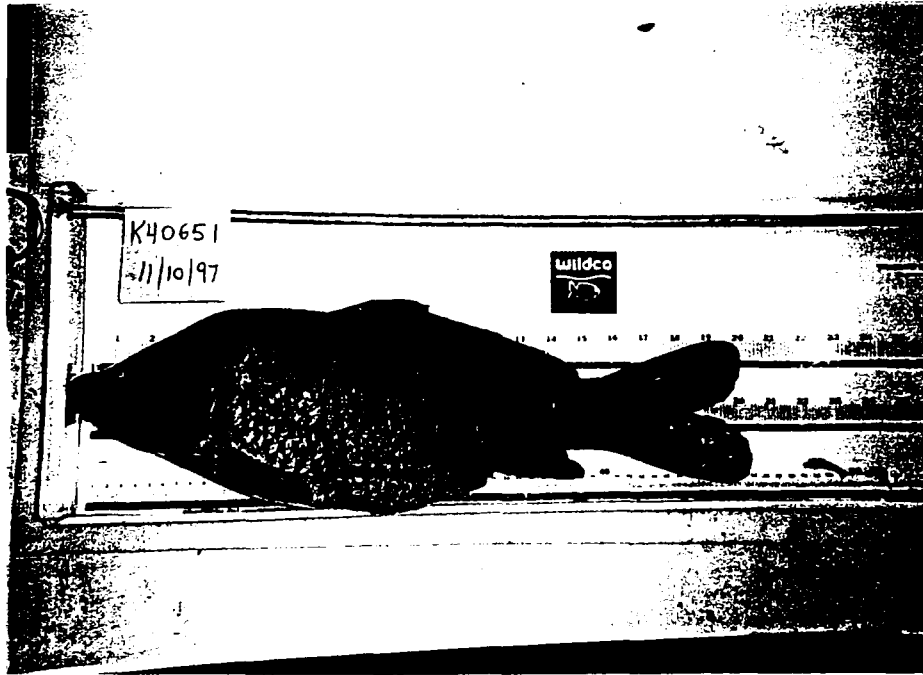
K40648

K40650



K40649

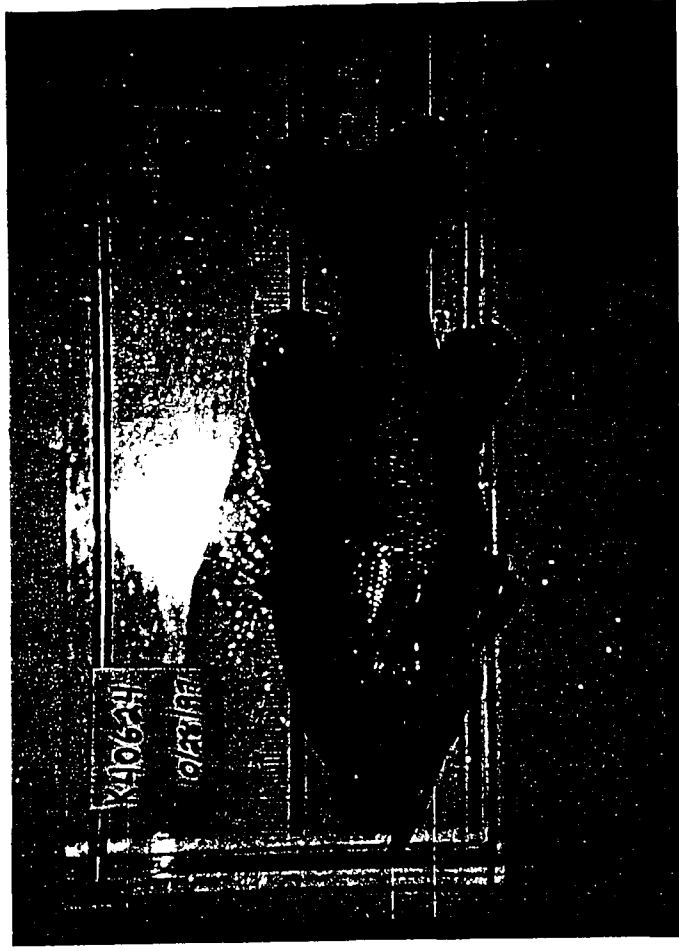




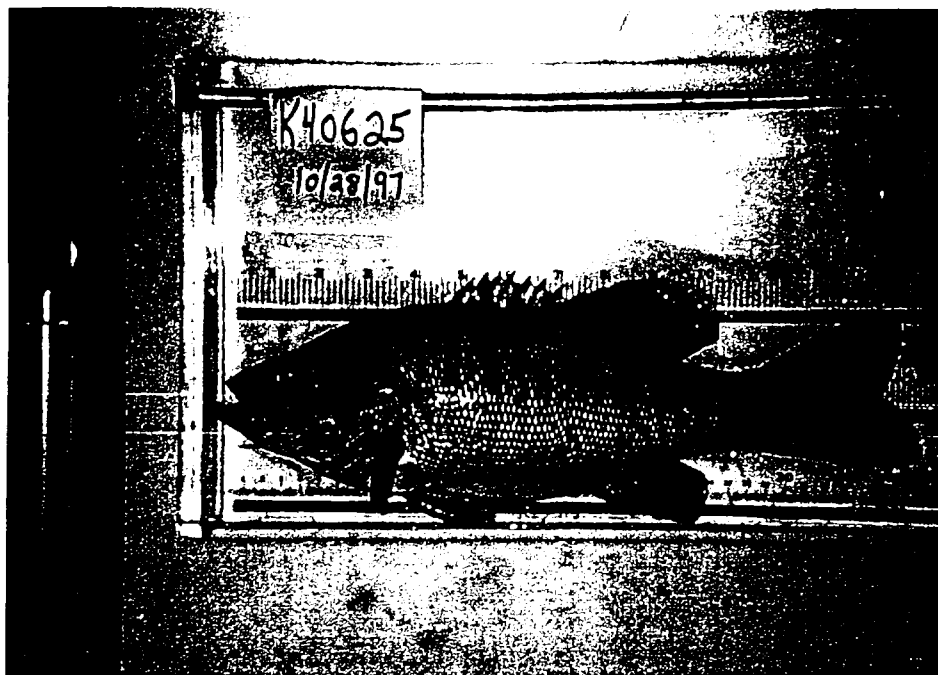
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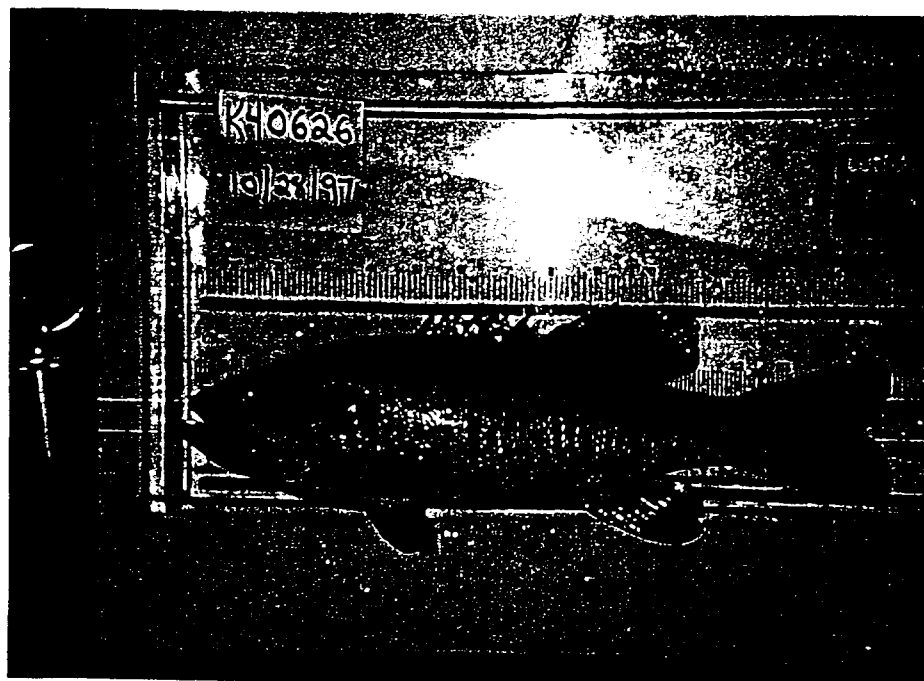
K40623



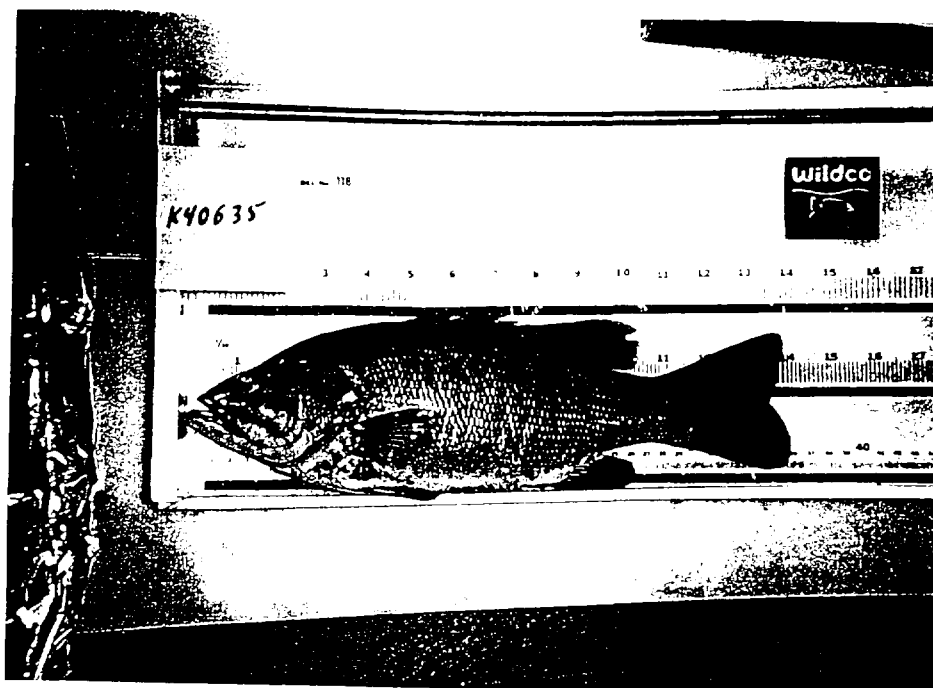
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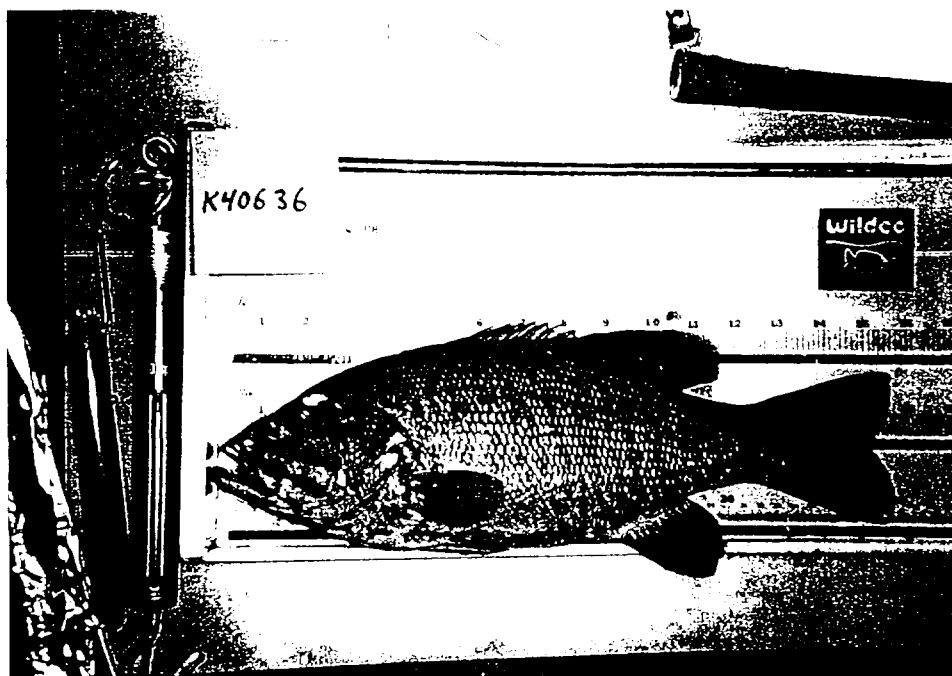
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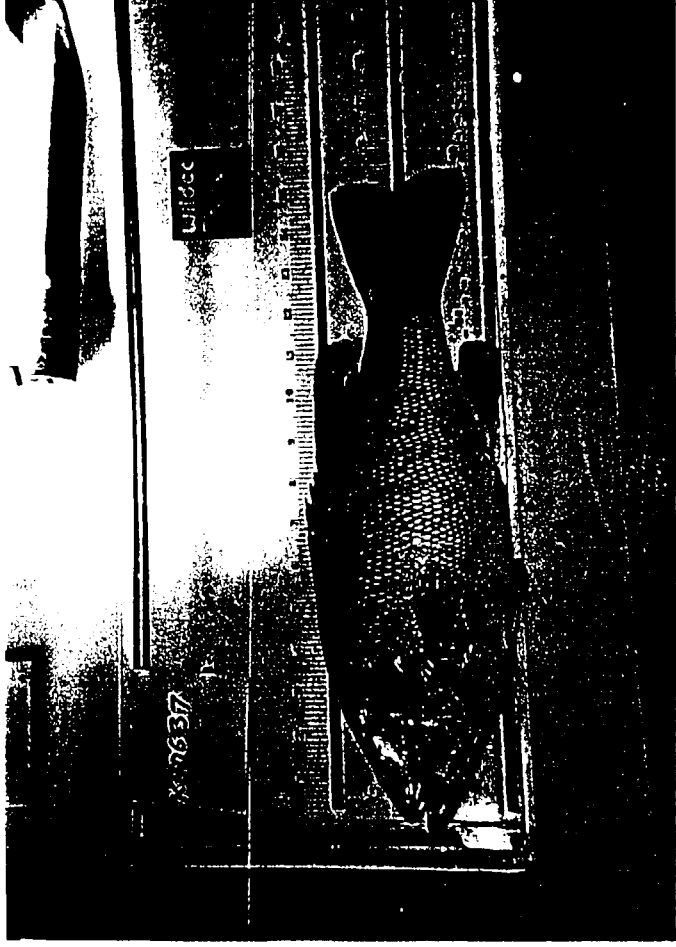
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K40635



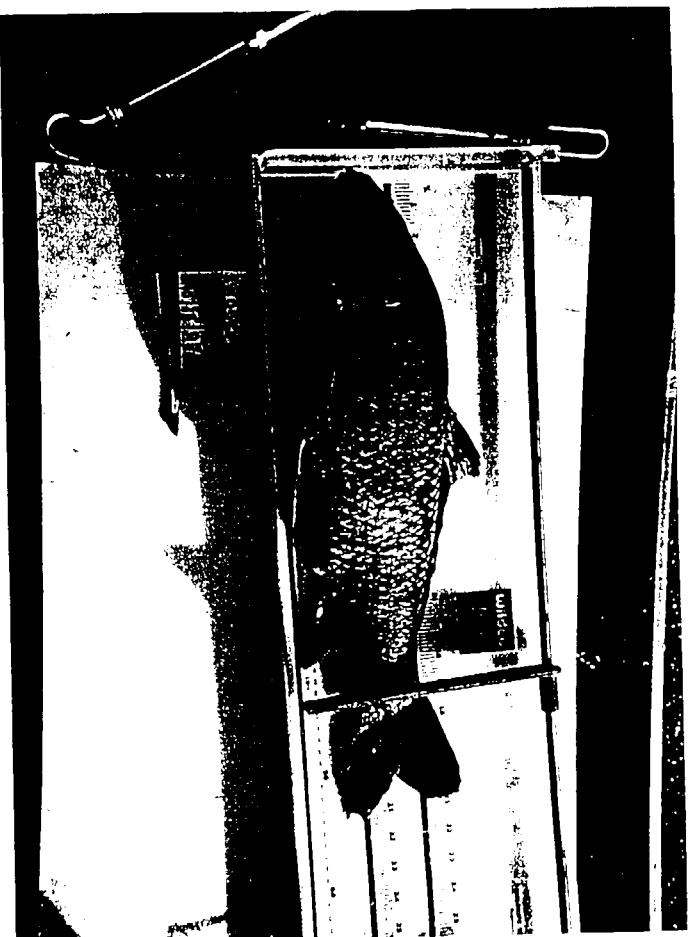
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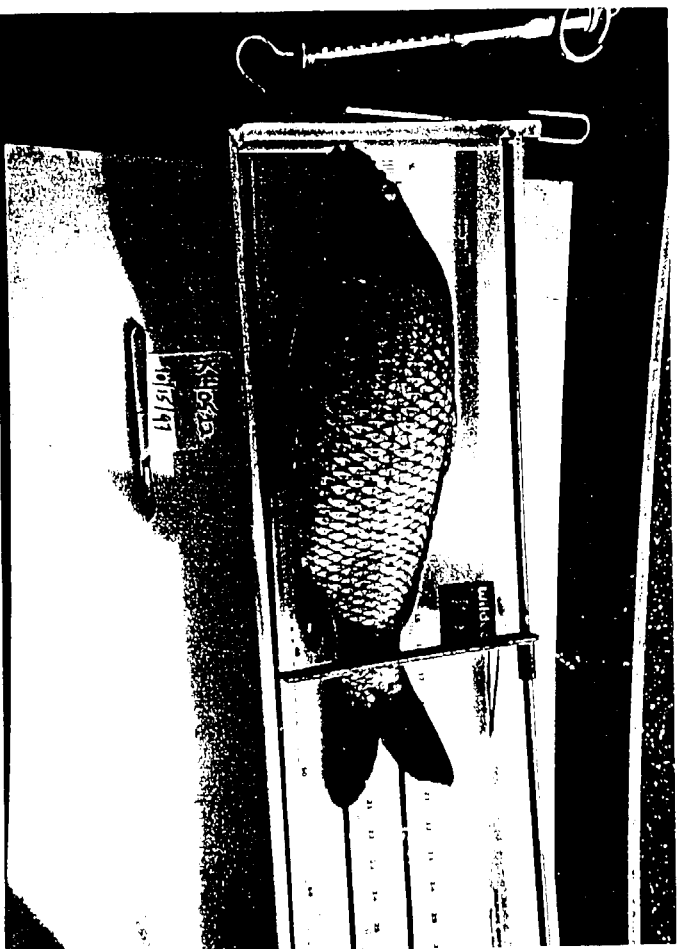
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K40638



K40521



K40522



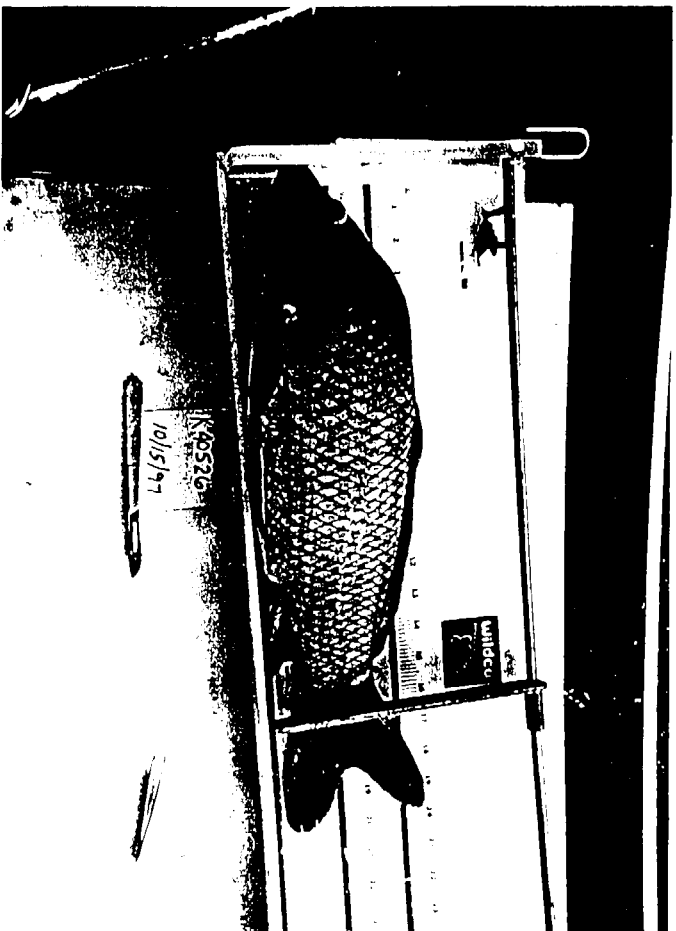
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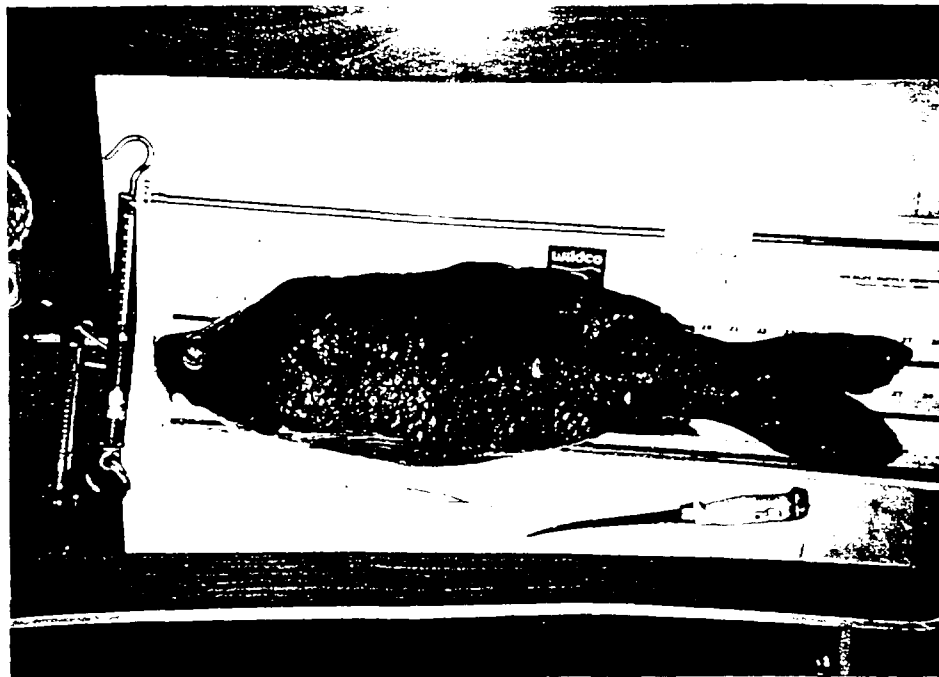
K40523



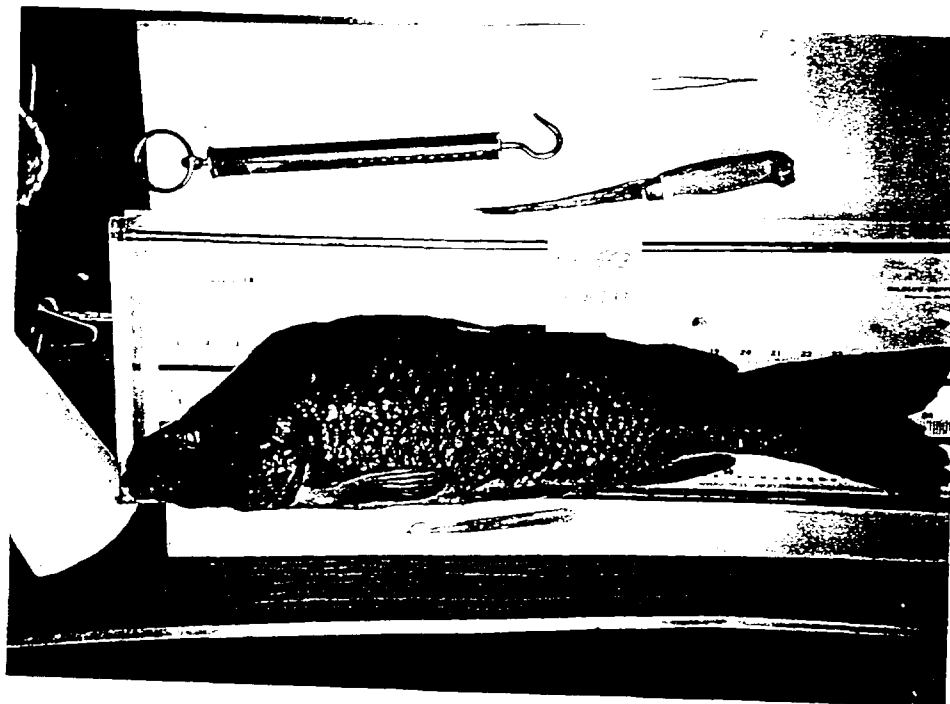
K40525



K40526

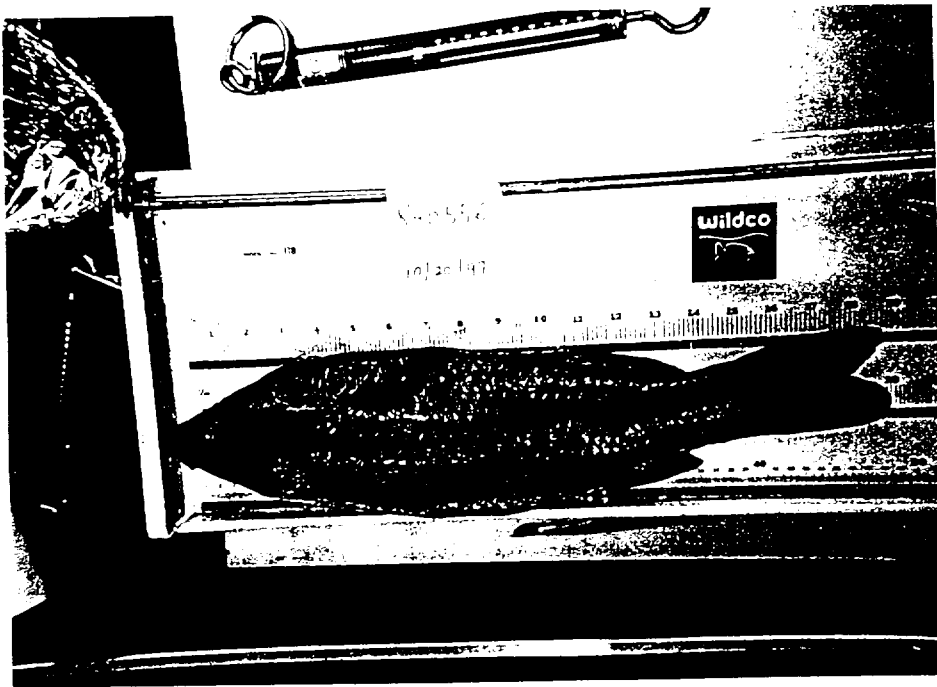


K40552

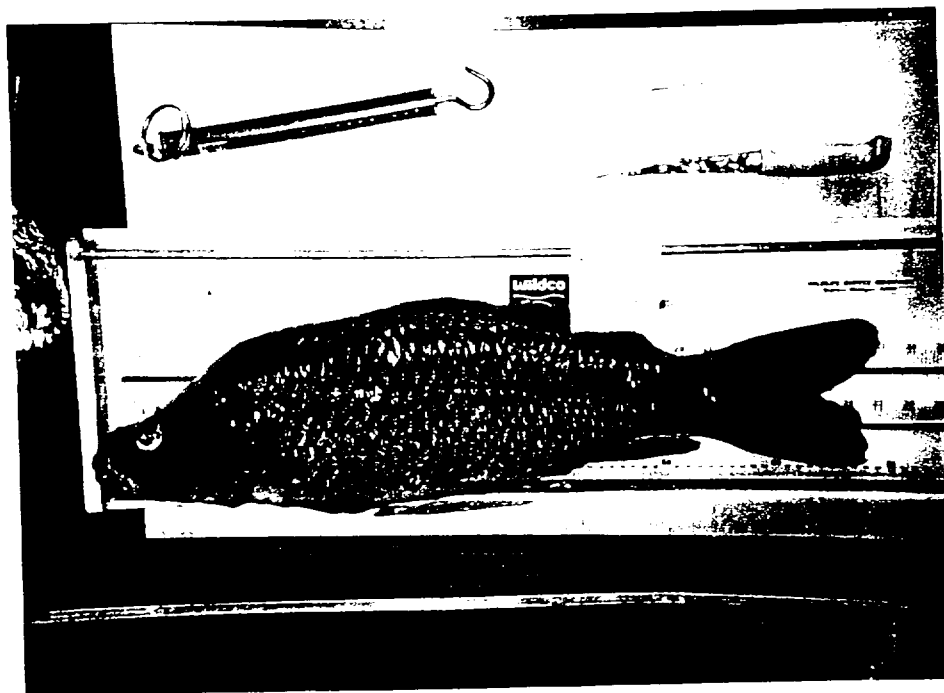


K40553

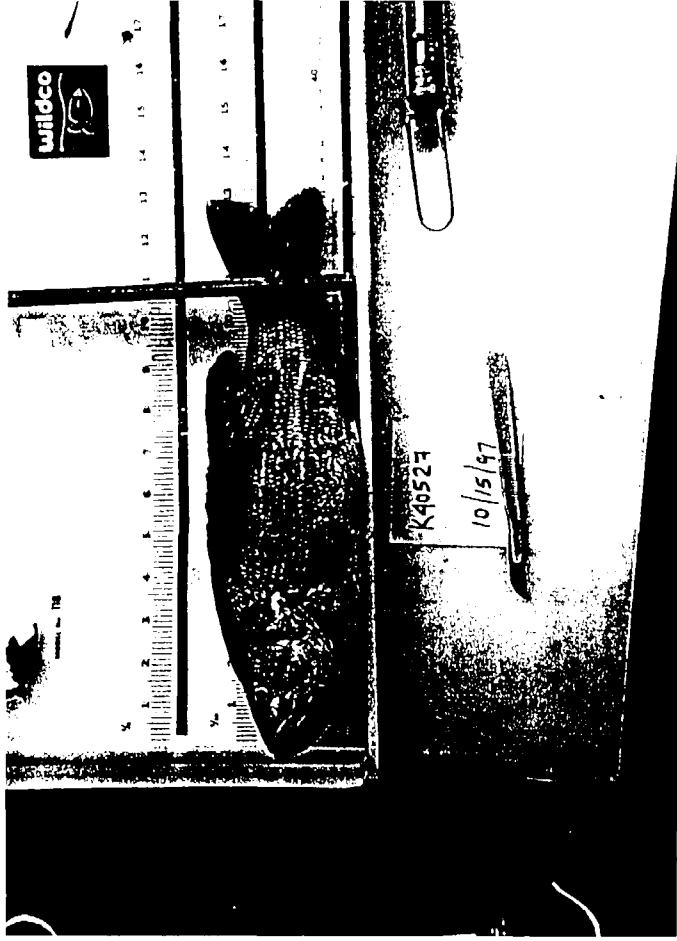
Adult Smallmouth Bass
(*Micropterus dolomieu*)



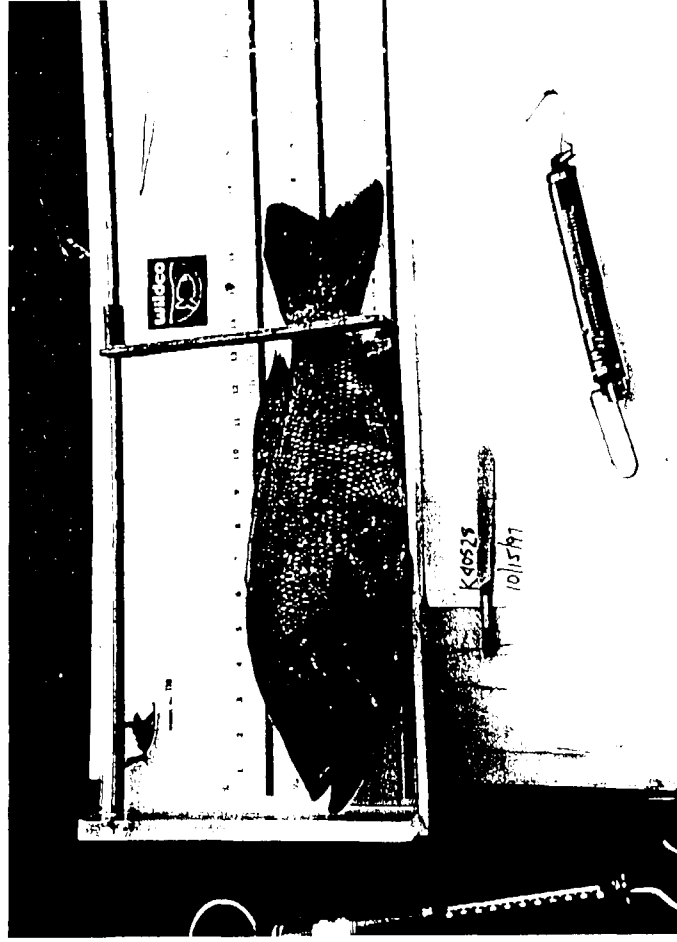
K40556



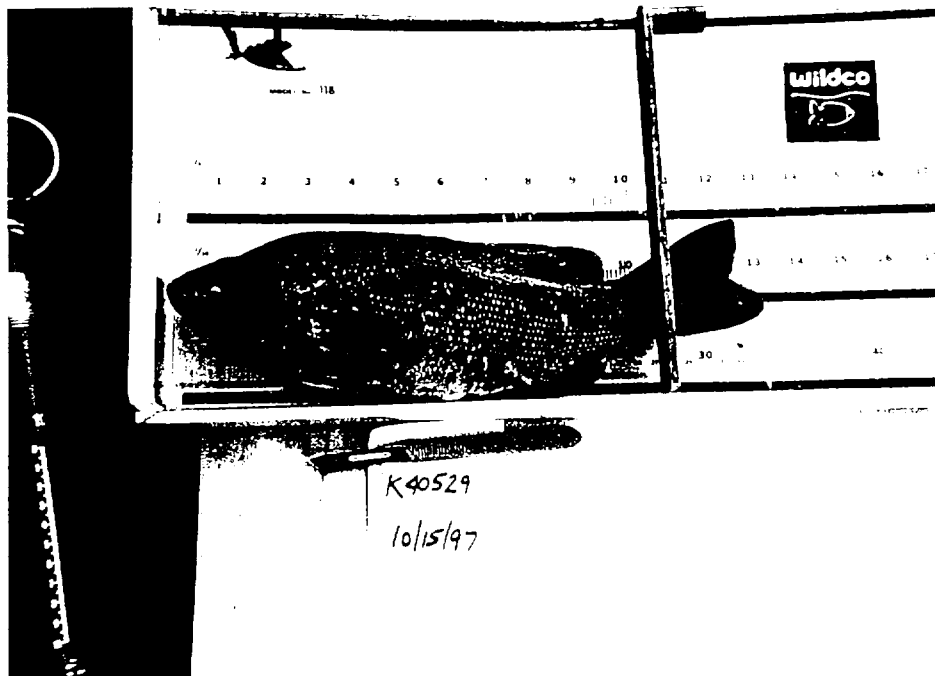
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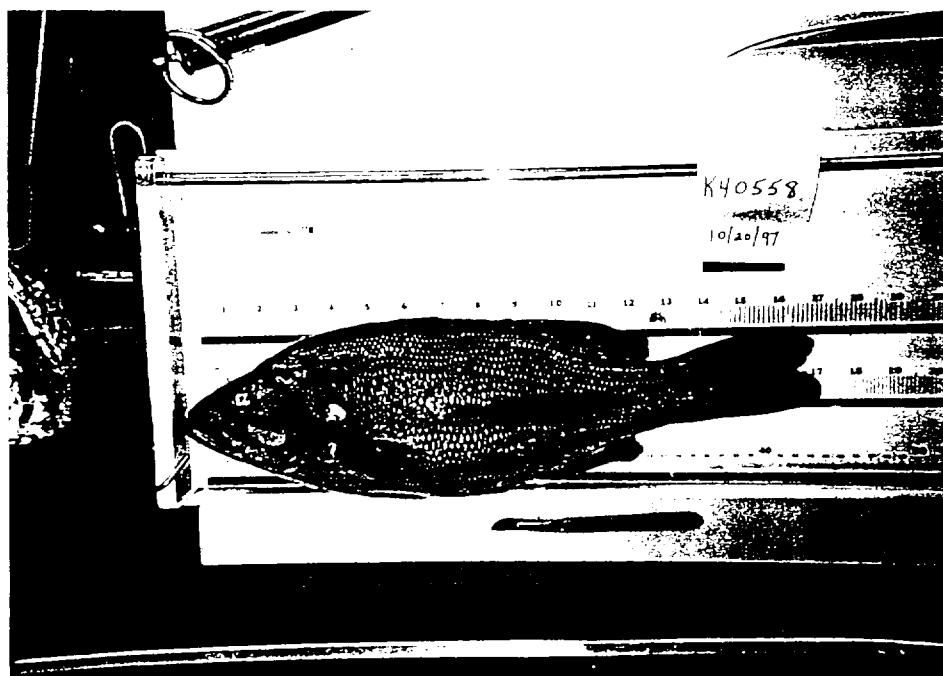
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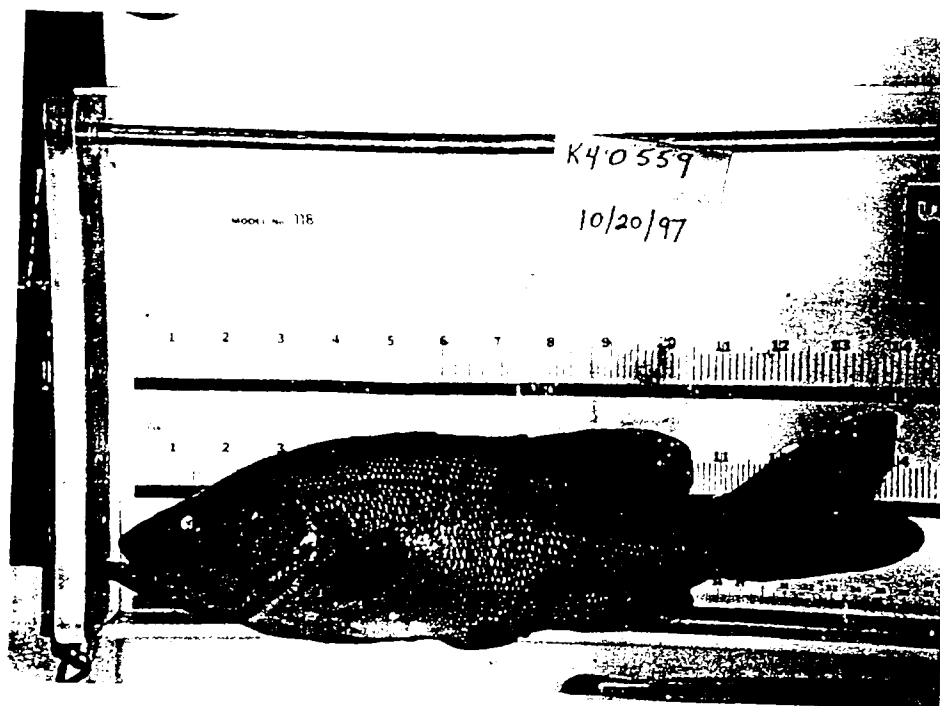
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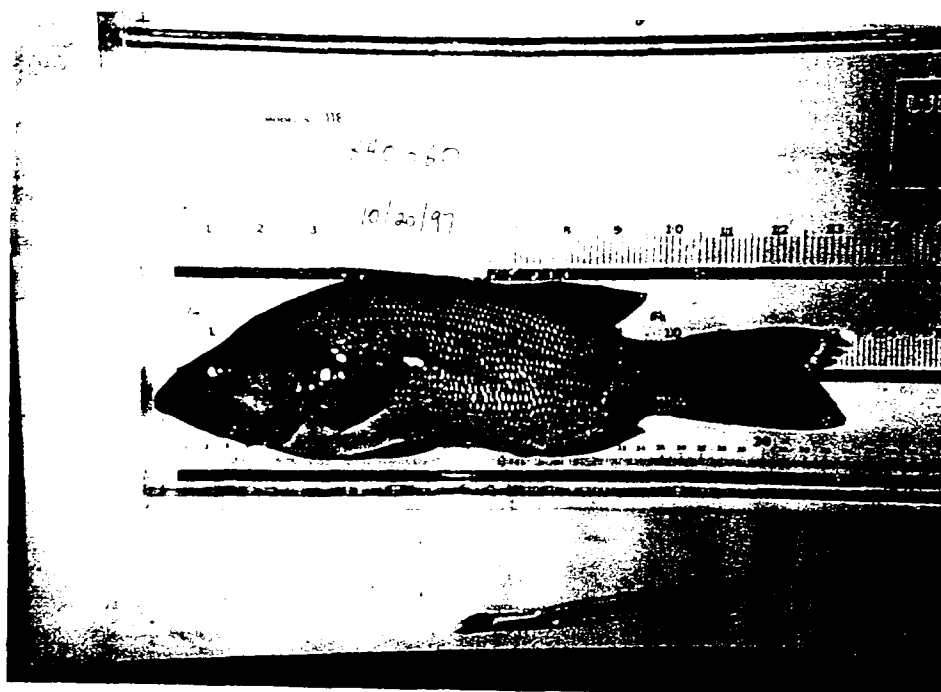
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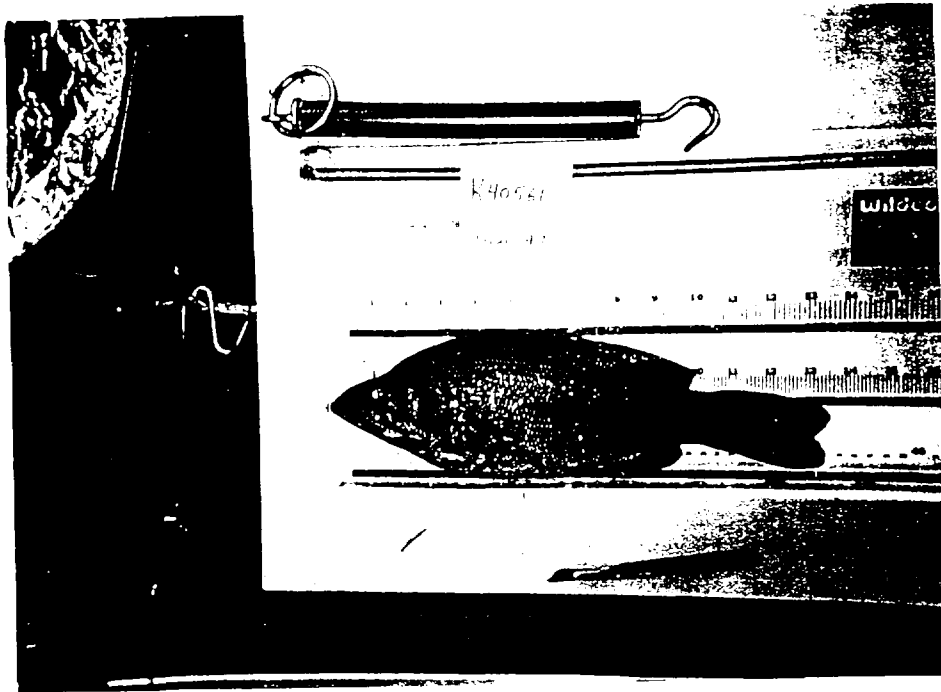
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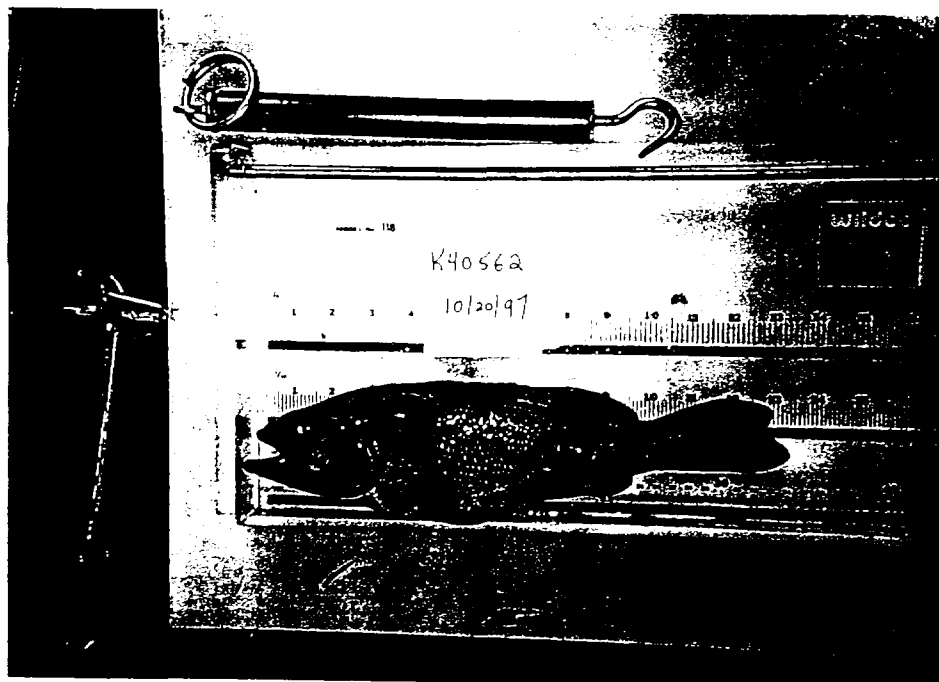
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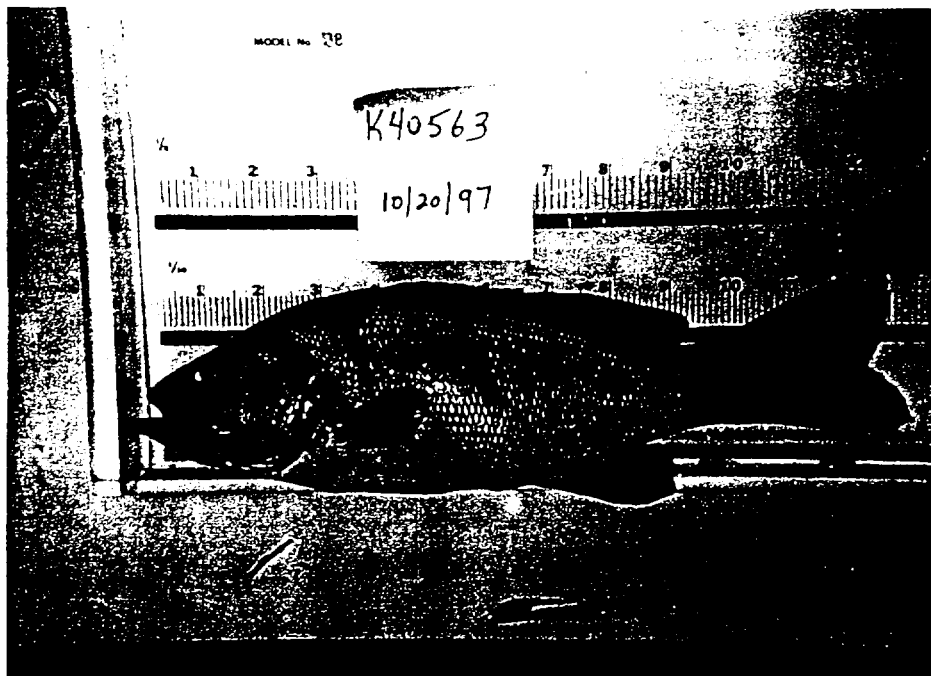
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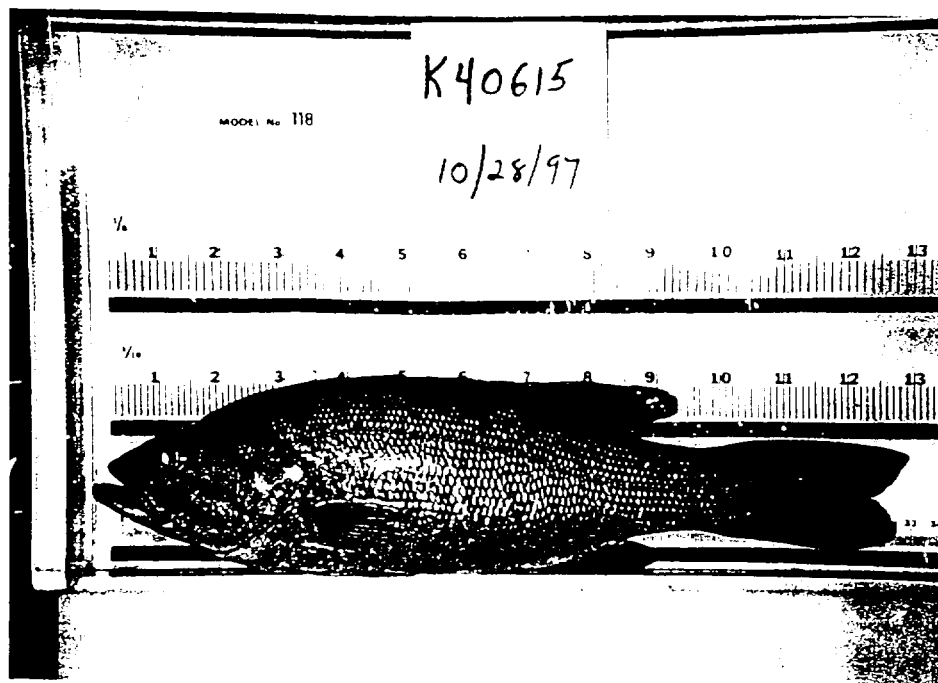
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K40562



K40563



K40615

K40617

10/28/97



K40617

ABSA #5

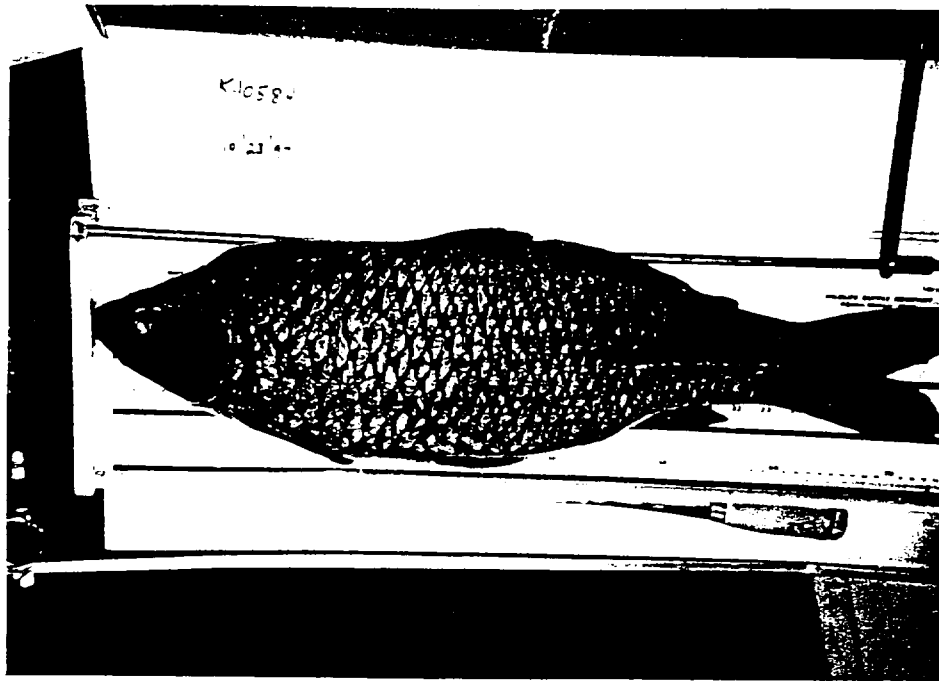
CARP

K40584
K40585
K40586
K40587
K40588
K40589
K40591
K40592
K40593
K40594
K40595

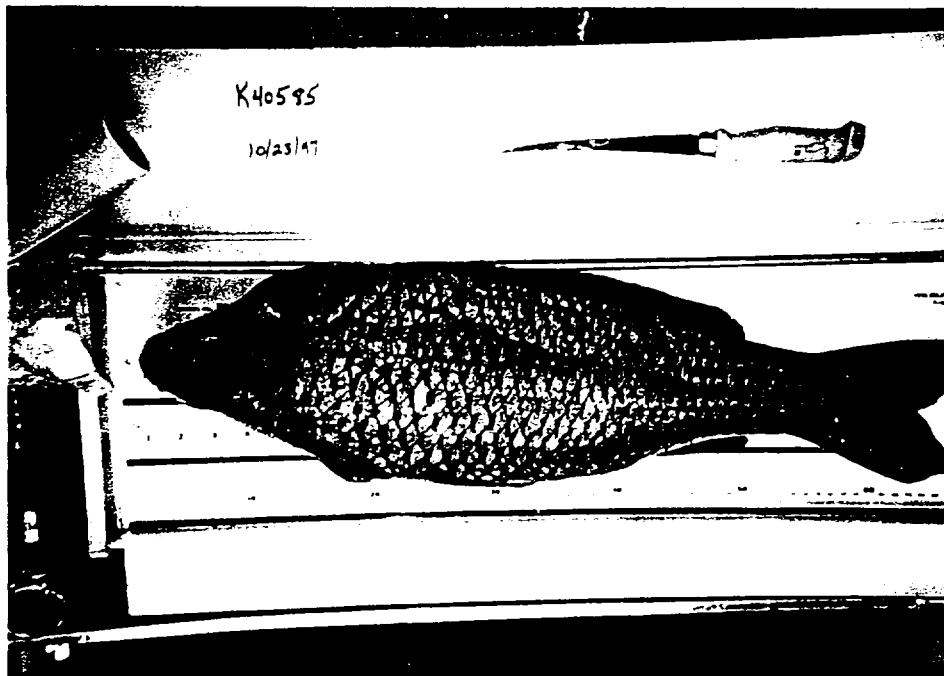
ADULT SMALLMOUTH BASS

K40596
K40597
K40598
K40599
K40600
K40601
K40602
K40603
K40605
K40606
K40607

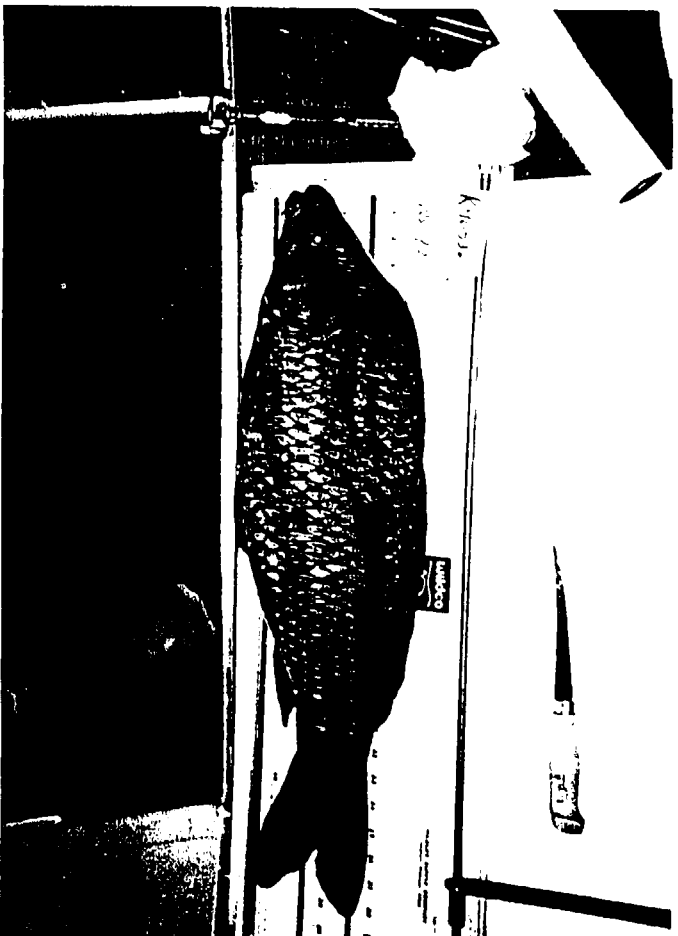
Carp
(*Cyprinus carpio*)



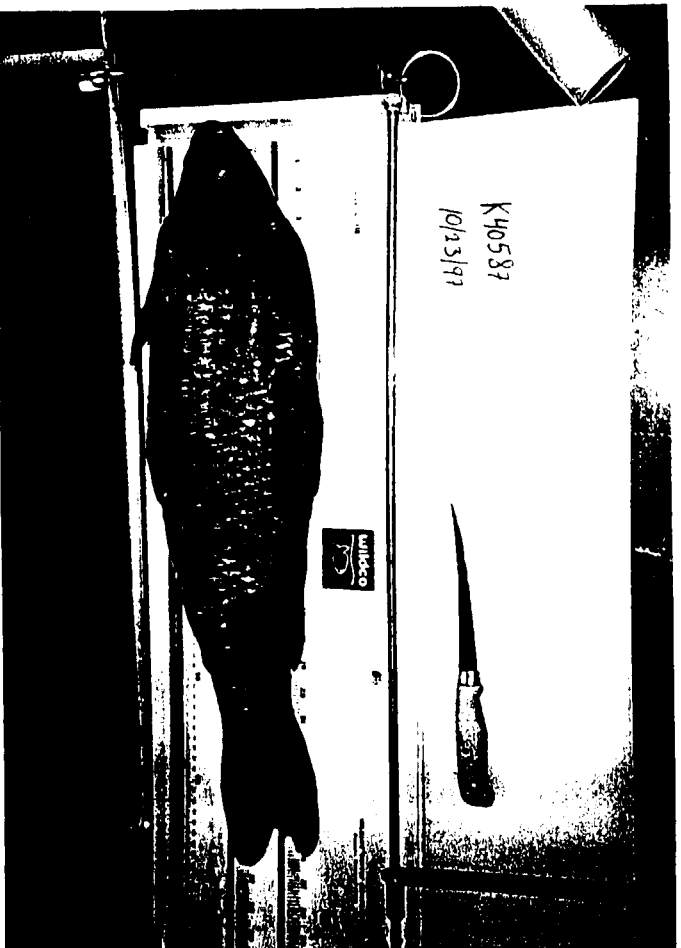
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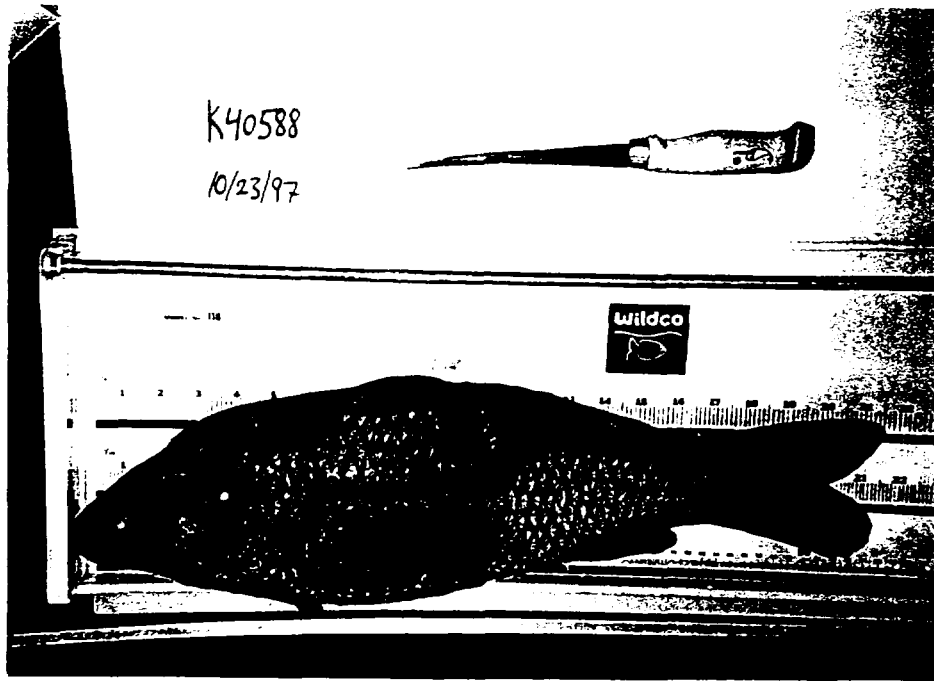
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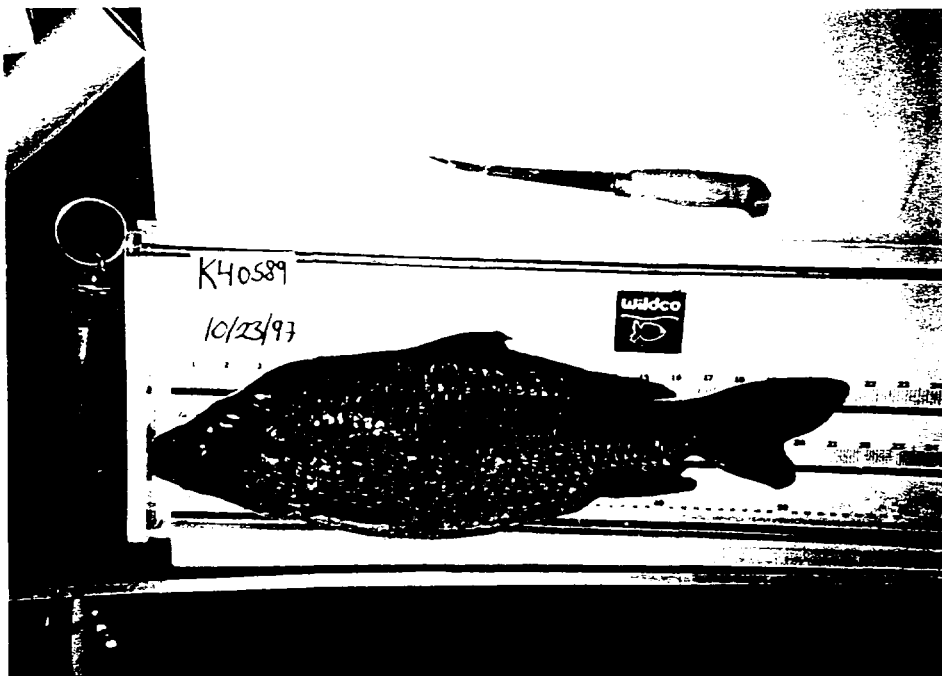
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K40587

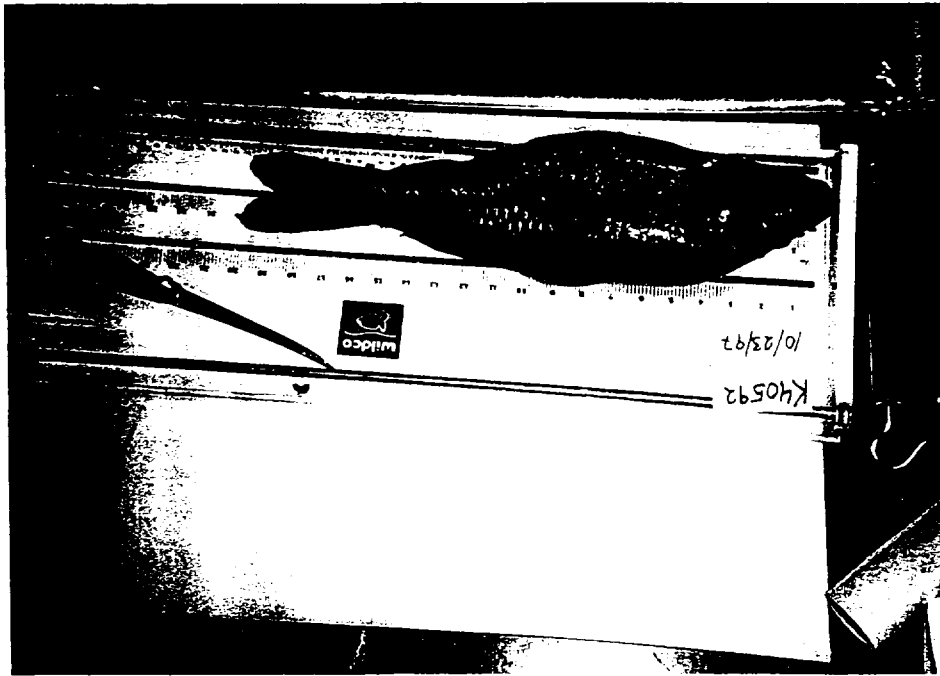


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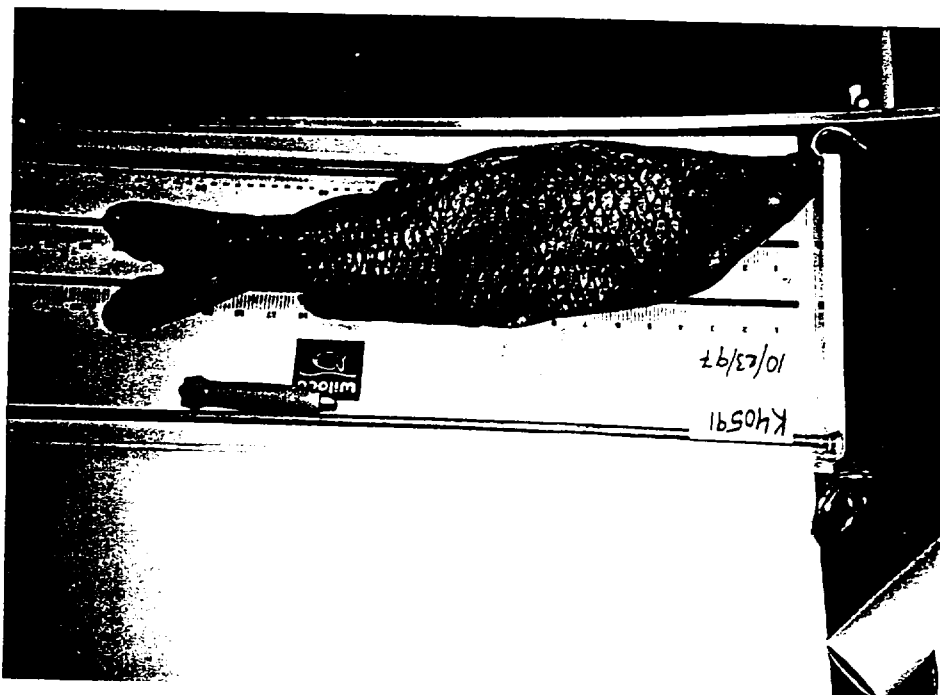


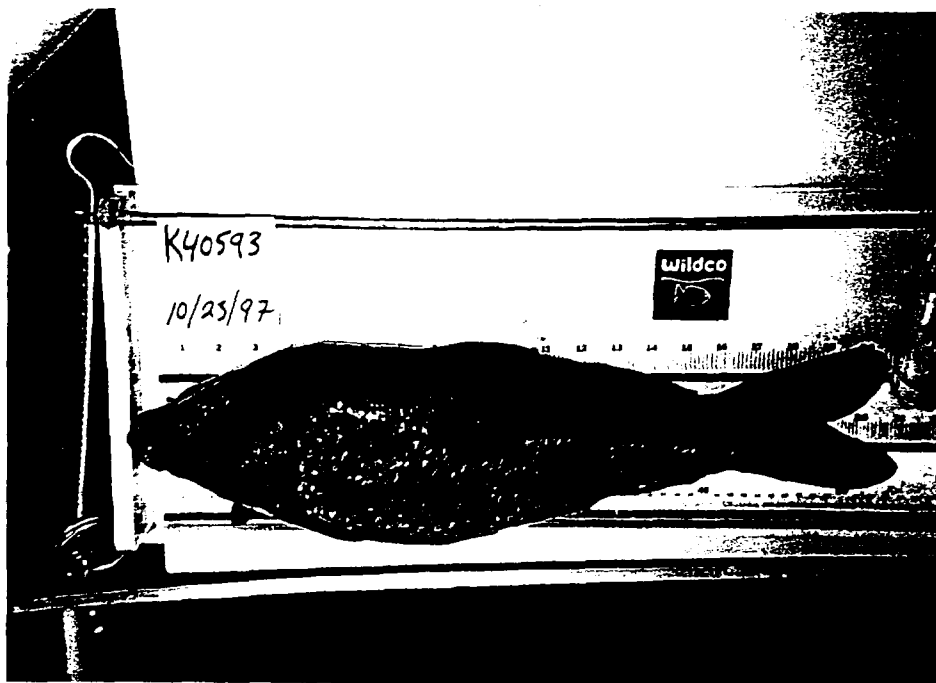
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K40592

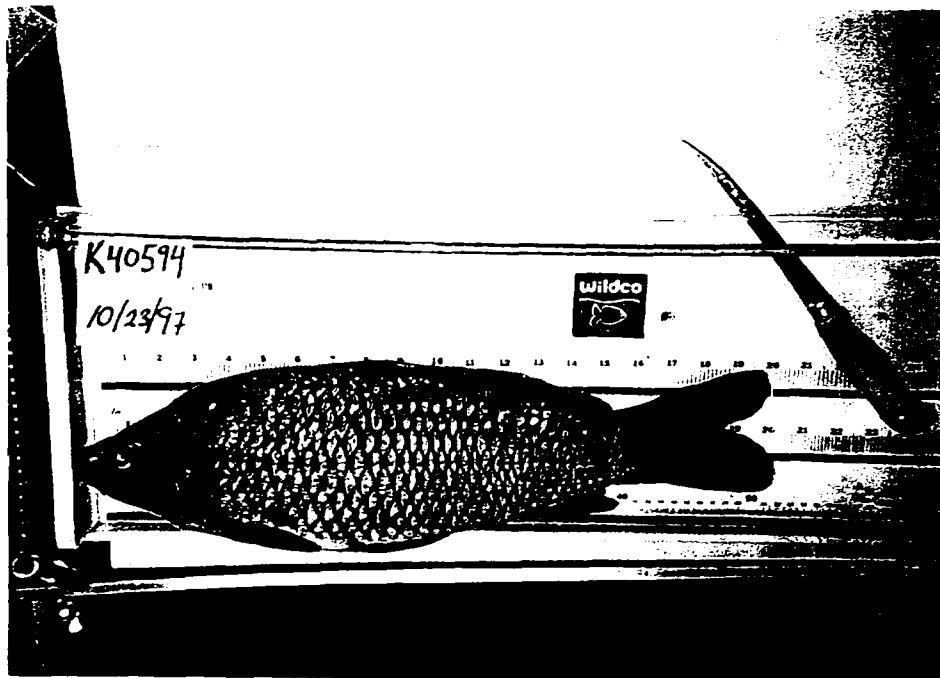


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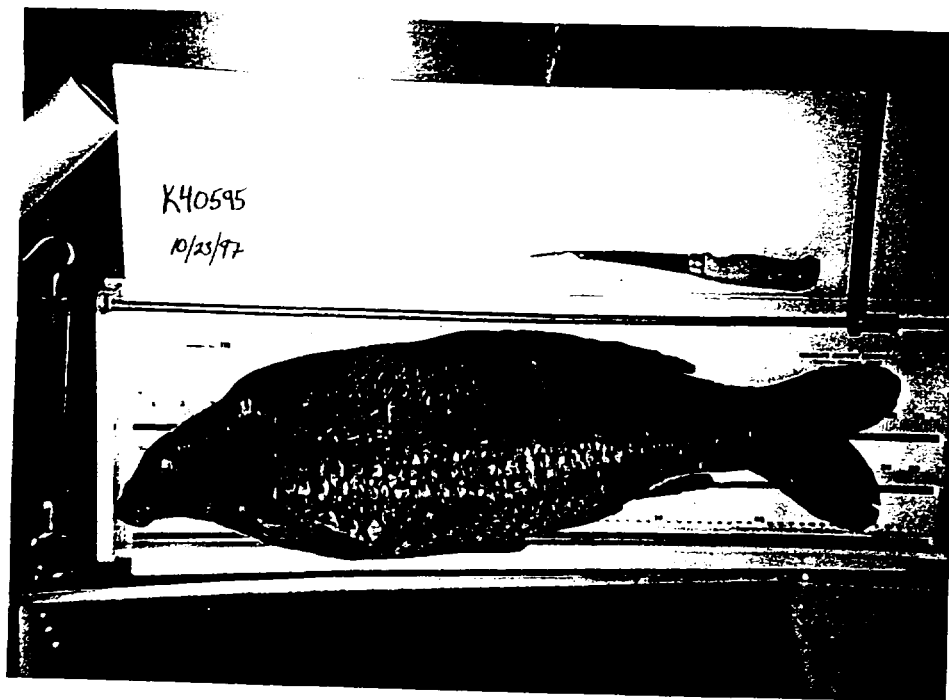




K40593



K40594

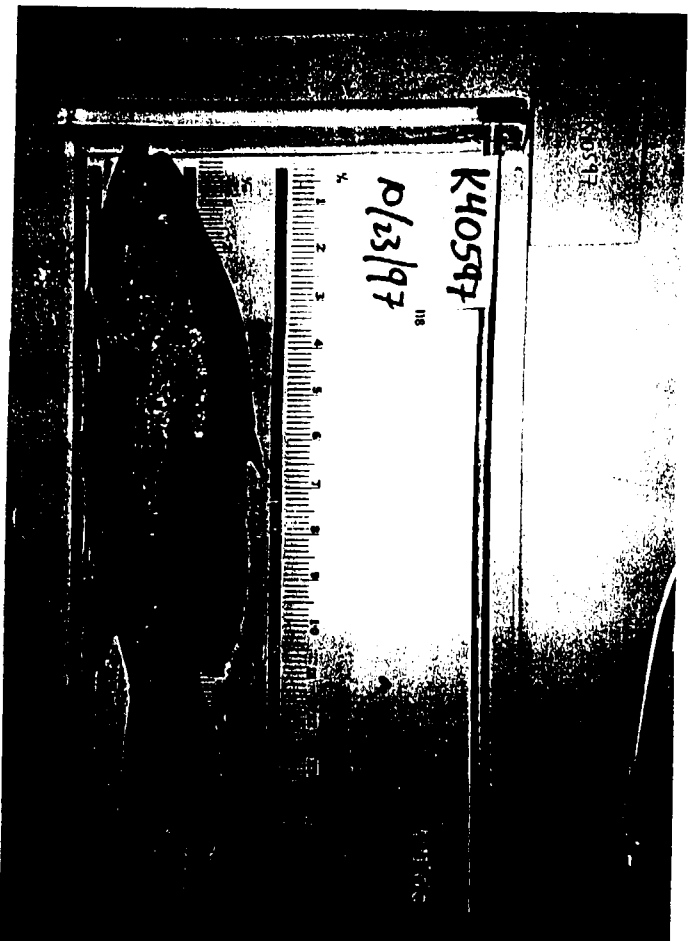


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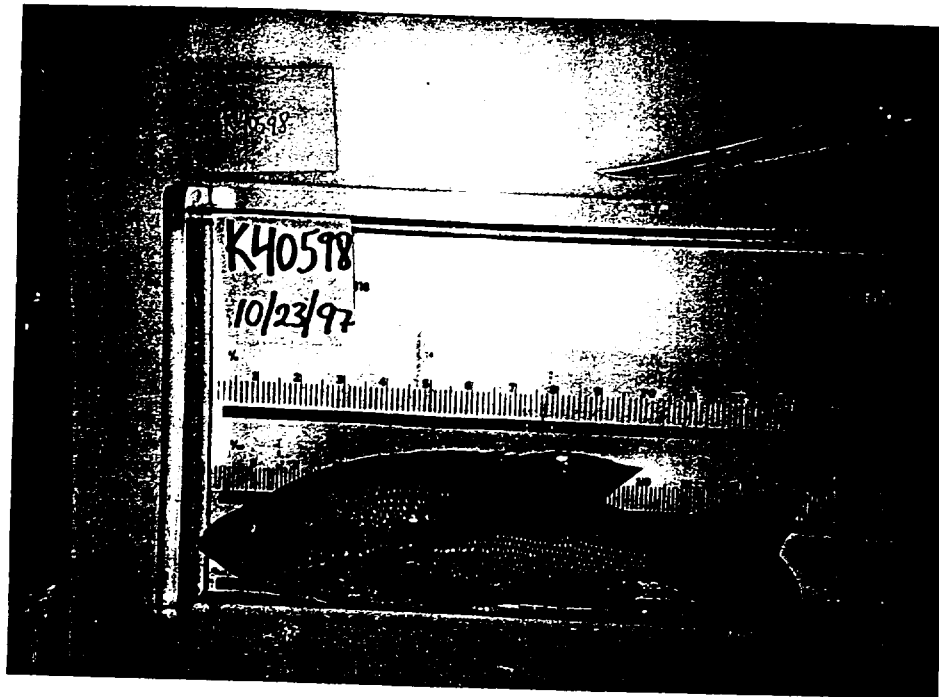
Adult Smallmouth Bass
(Micropterus dolomieu)



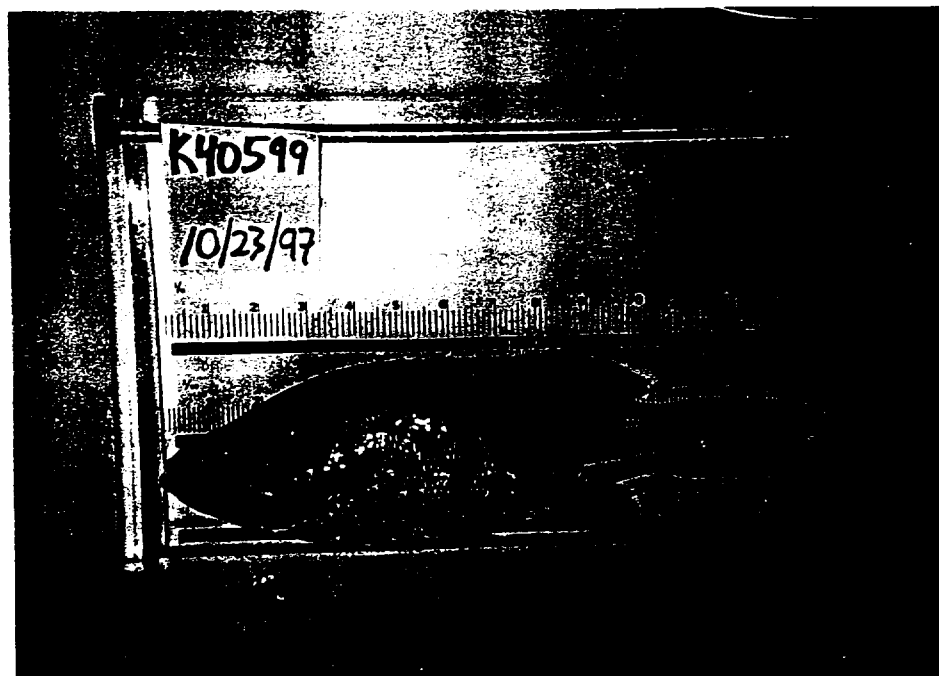
K40596



K40597

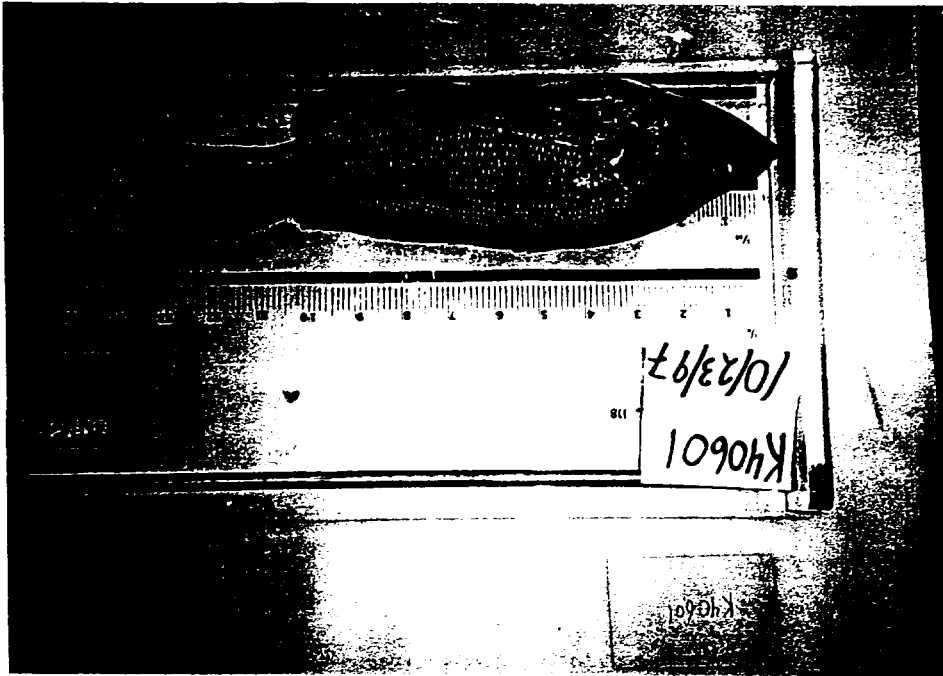


K40598



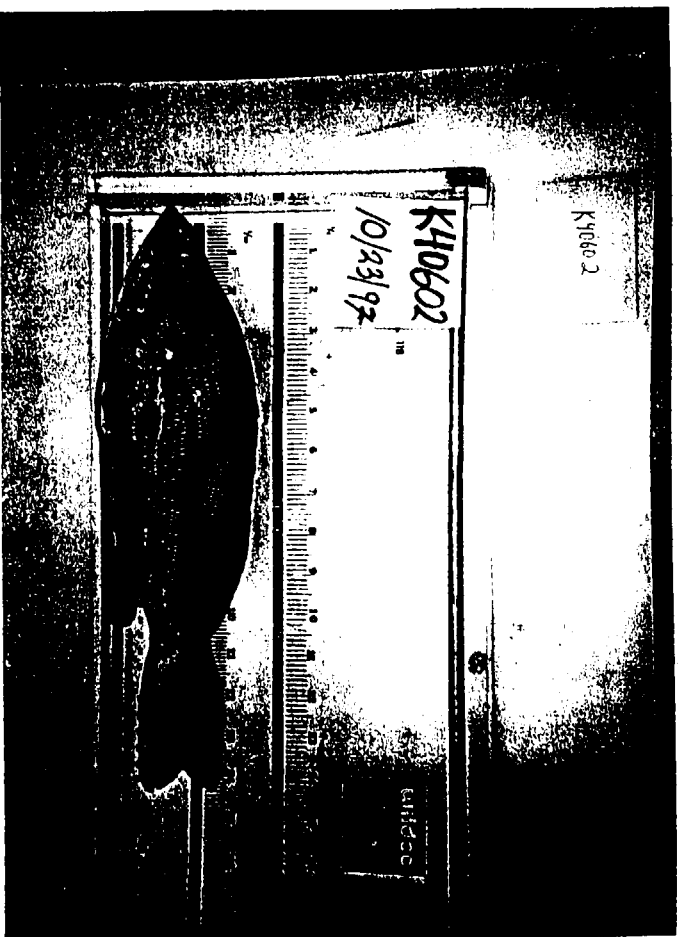
K40599

K40601

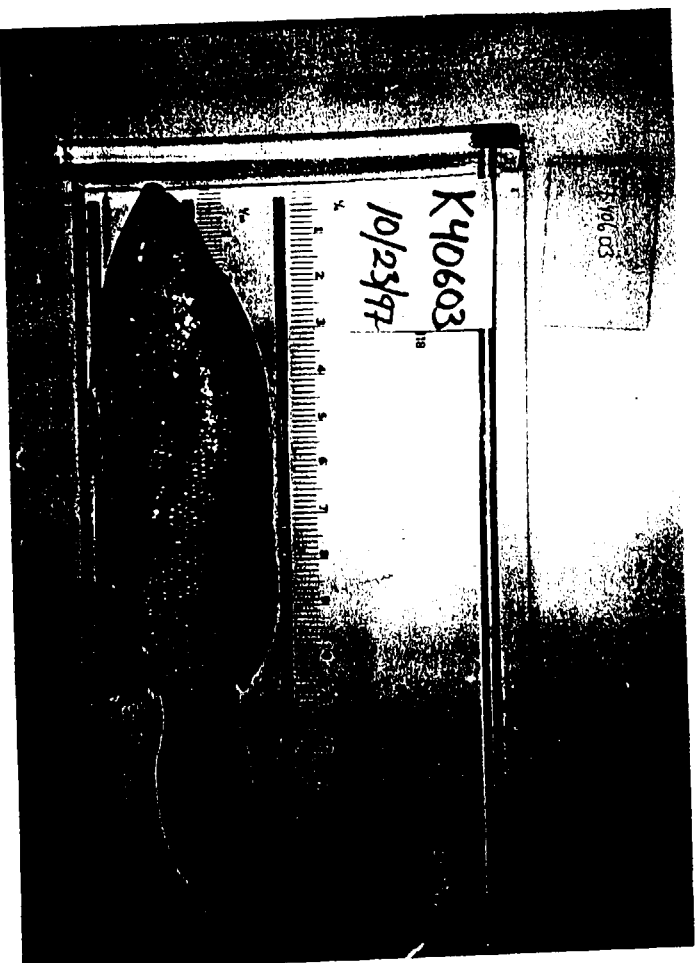


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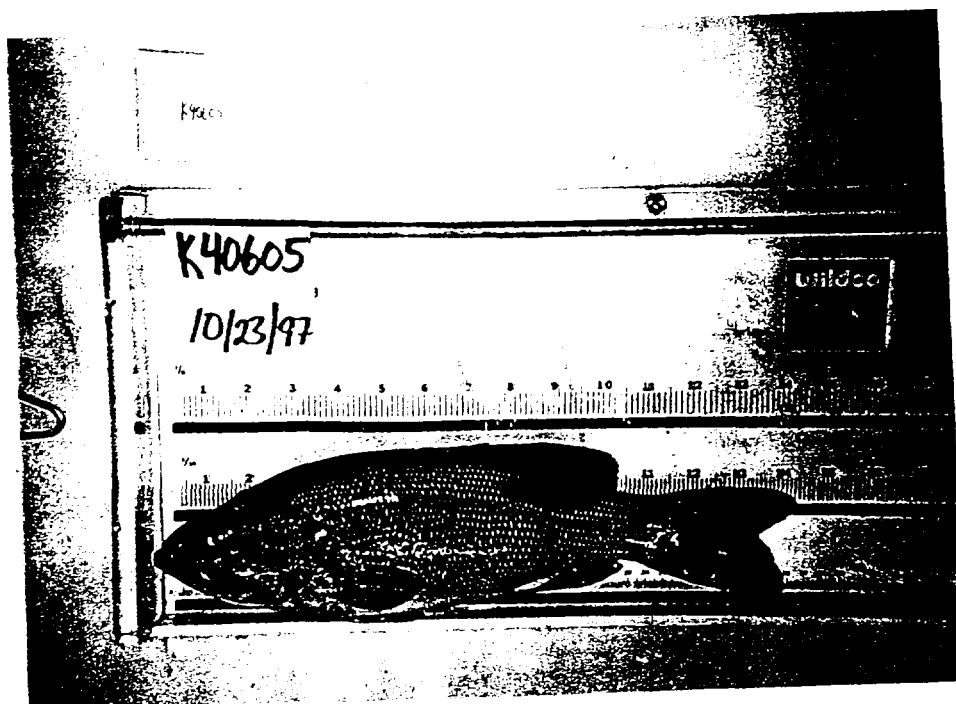




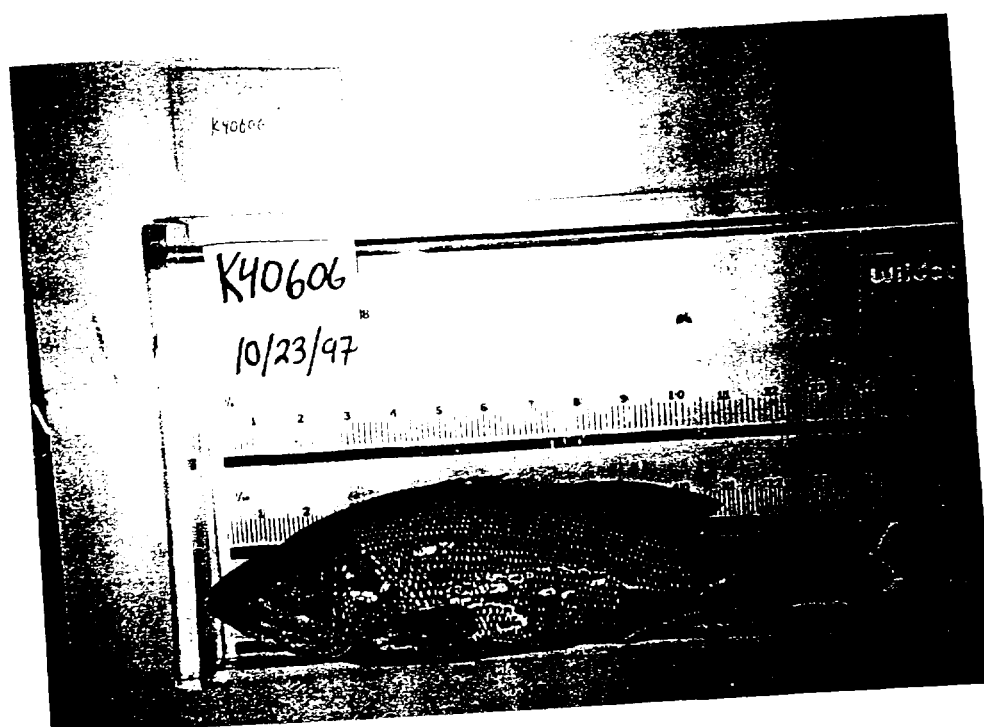
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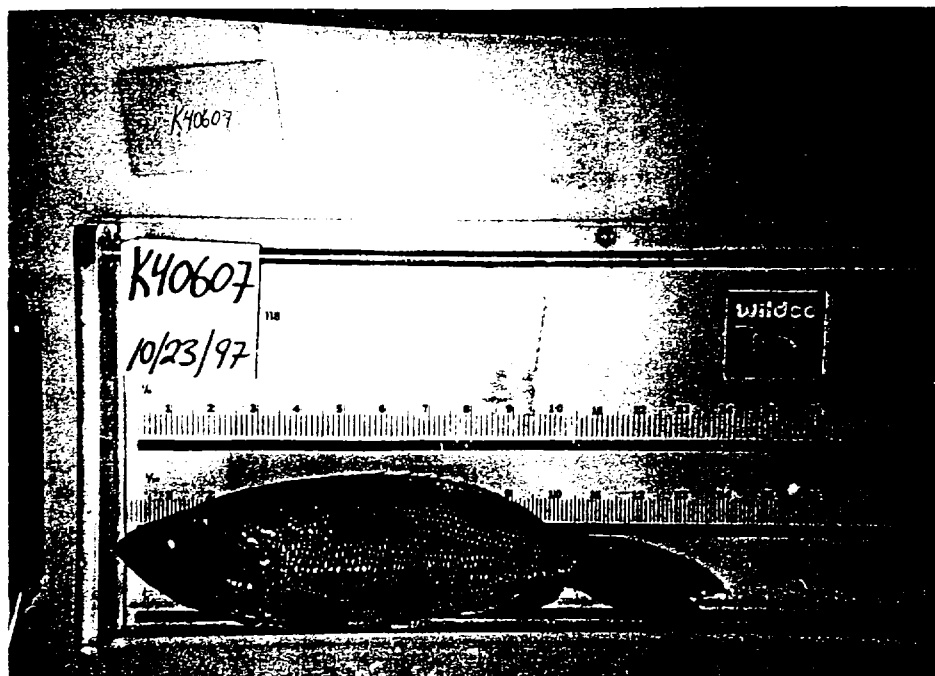
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K40605



K40606



K40607

ABSA #9

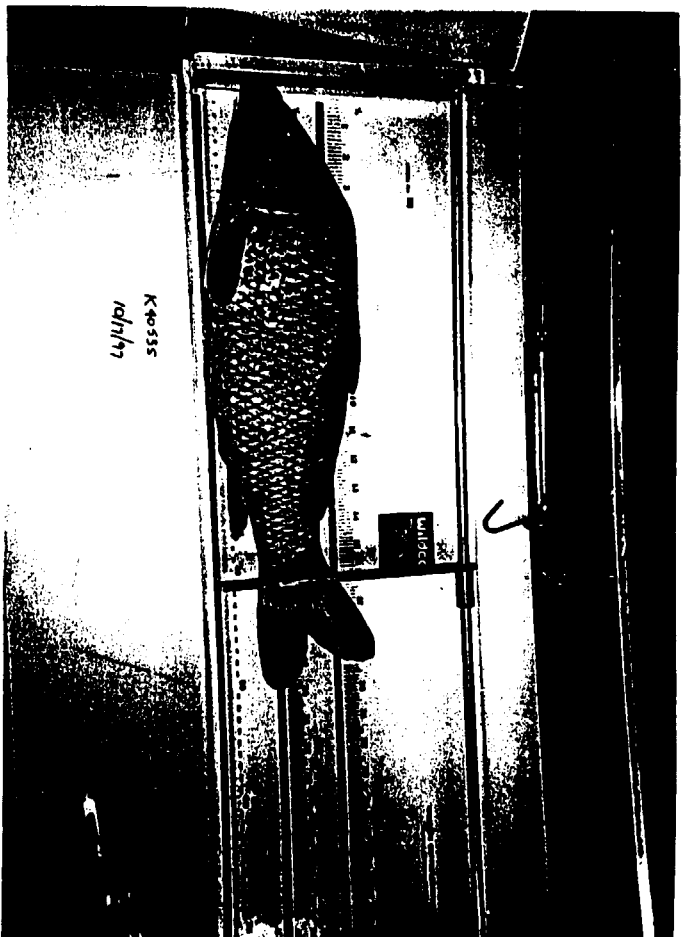
CARP

K40535
K40536
K40537
K40538
K40539
K40568
K40569
K40570
K40571
K40572
K40574

ADULT
SMALLMOUTH BASS

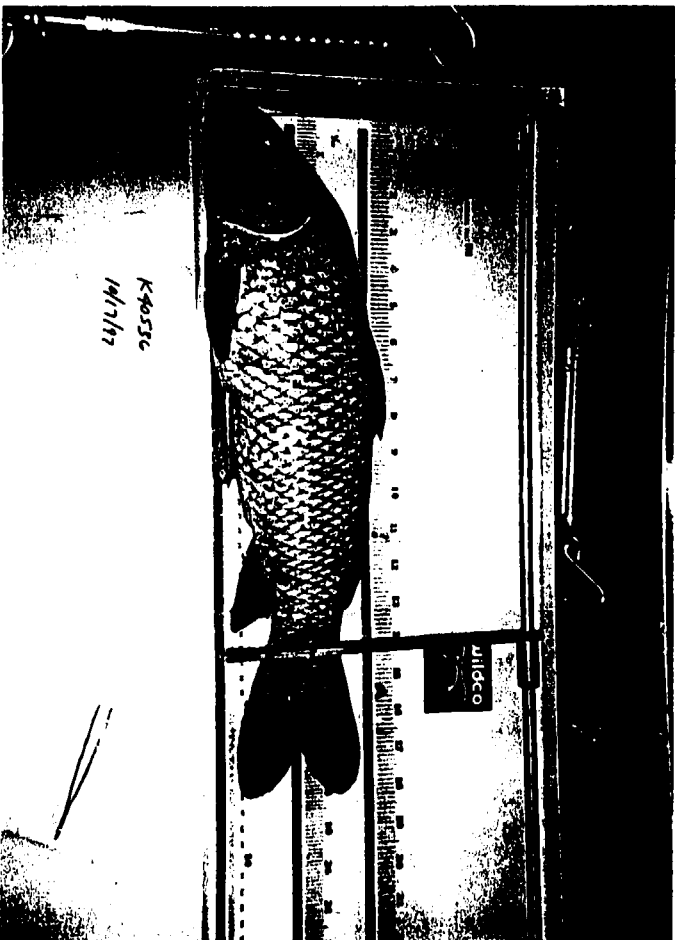
K40540
K40542
K40575
K40576
K40577
K40578
K40579
K40580
K40581
K40582
K40583

Carp
(*Cyprinus carpio*)



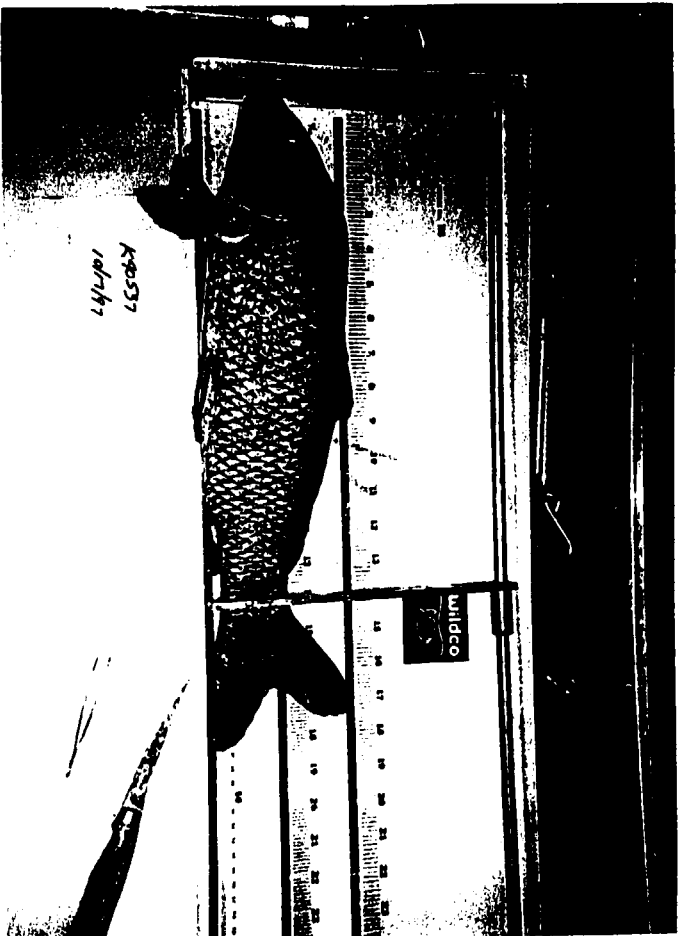
K40535
14/1/17

K40535

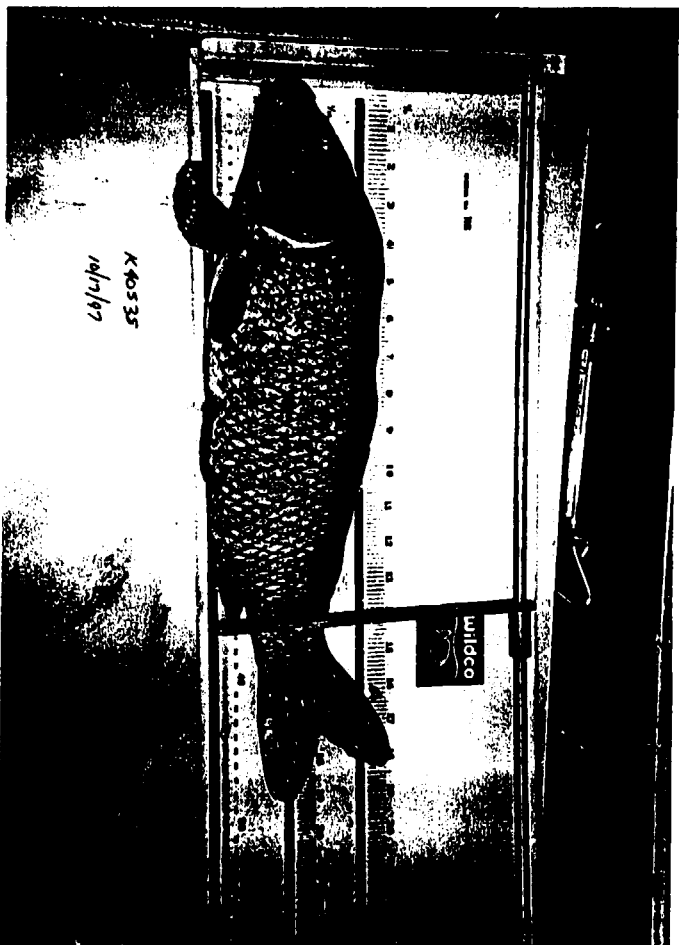


K40536
14/1/17

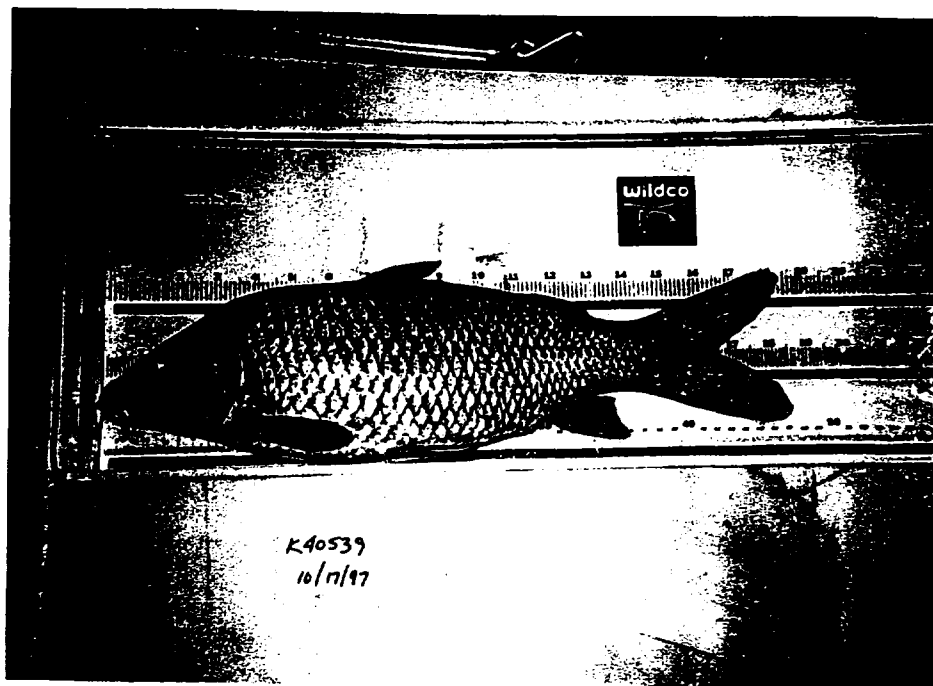
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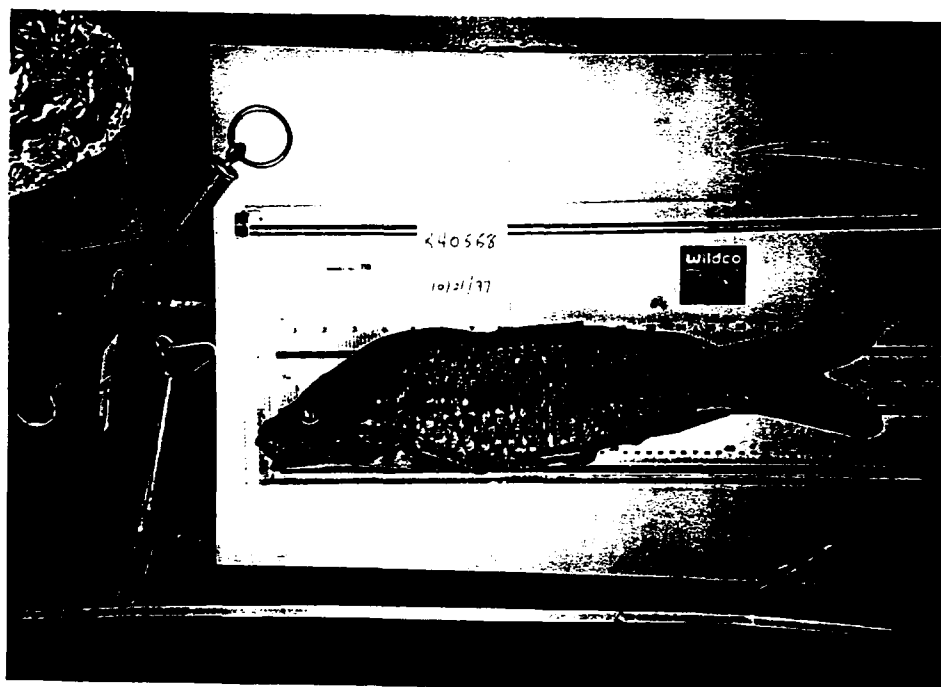
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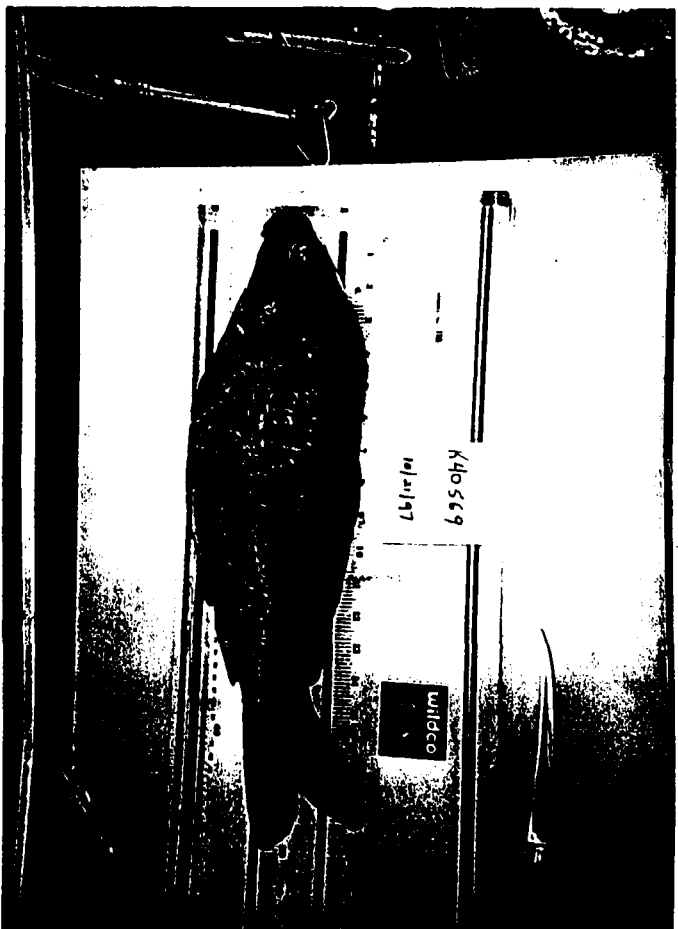
K40538



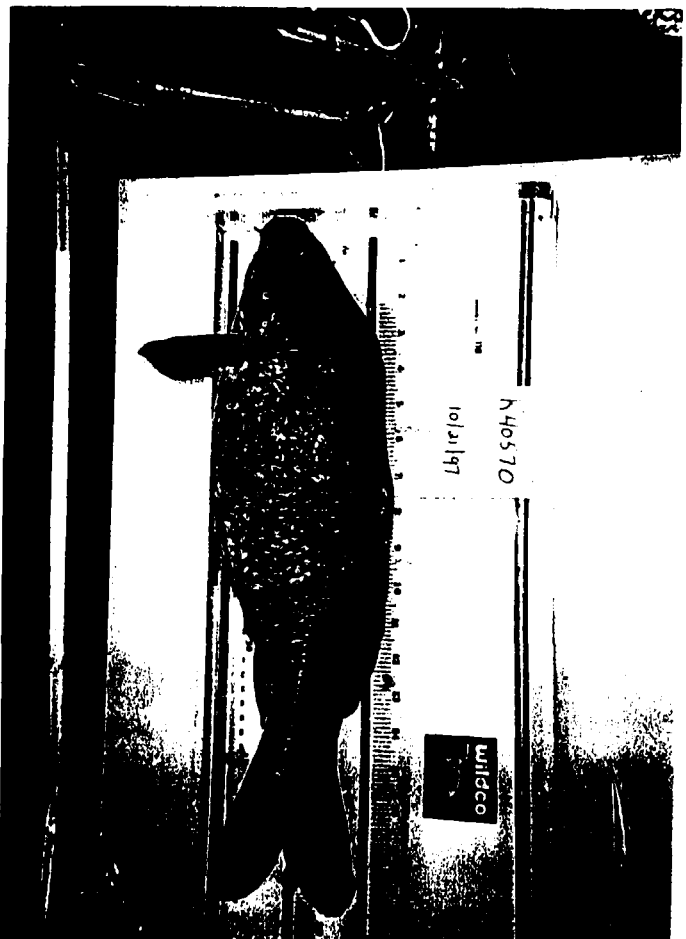
K40539



K40568

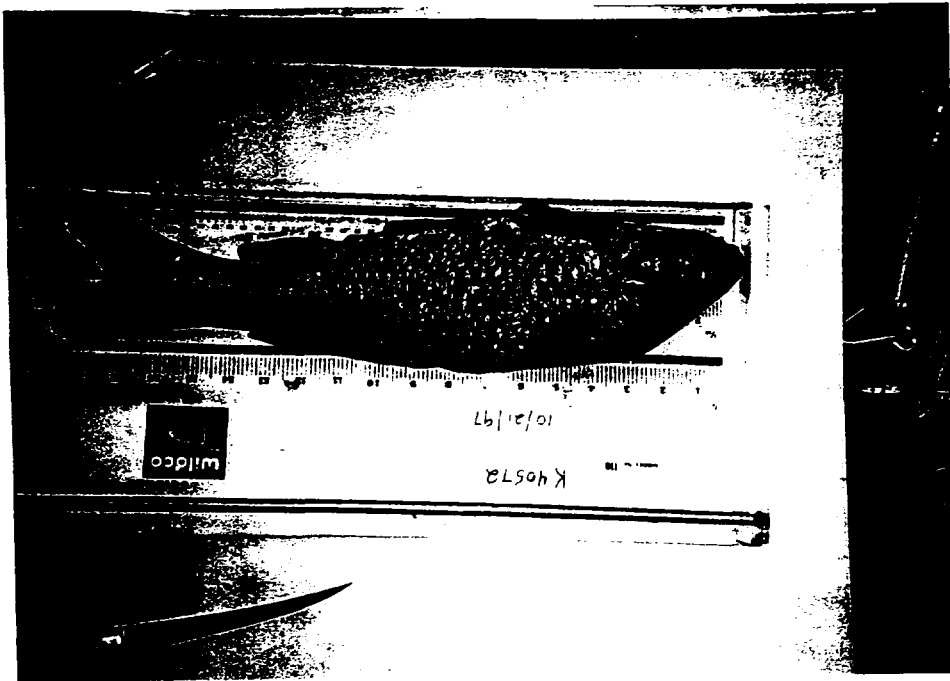


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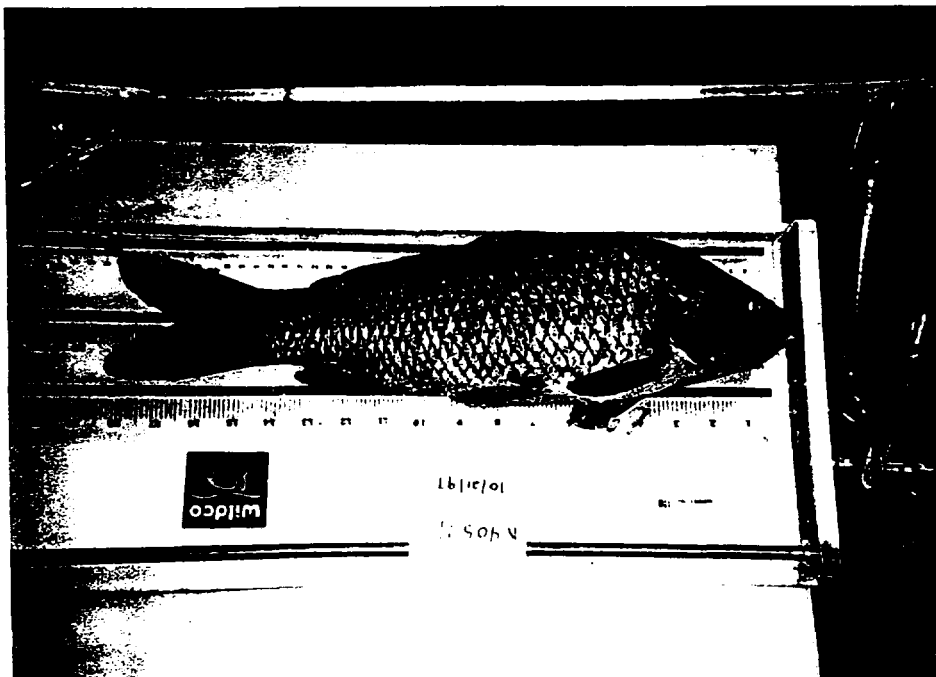


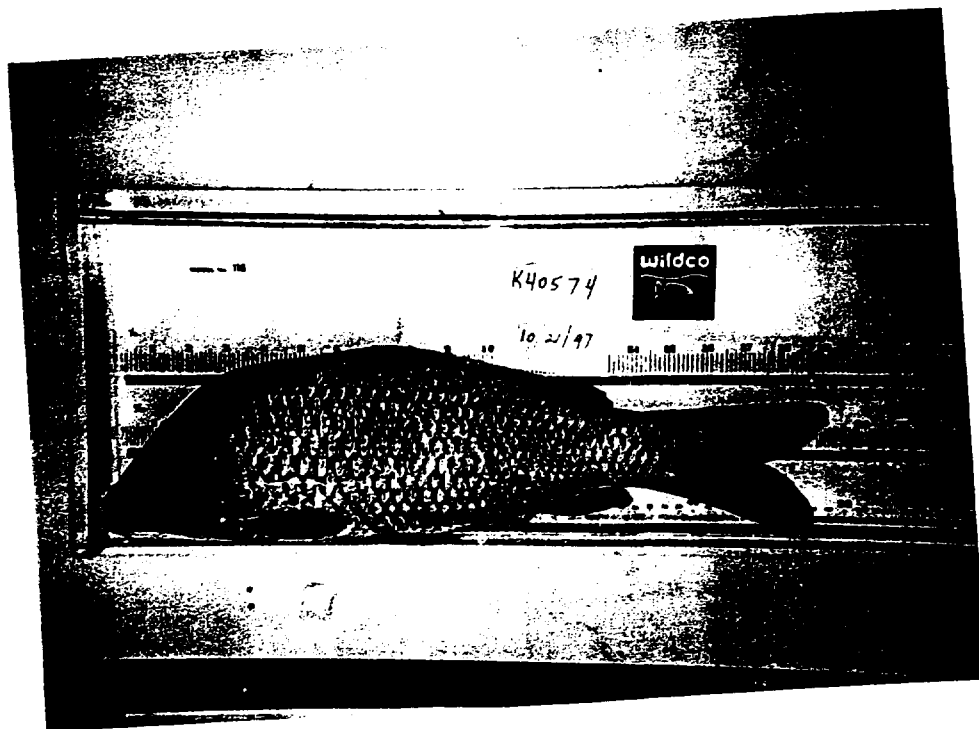
K40570

K40572



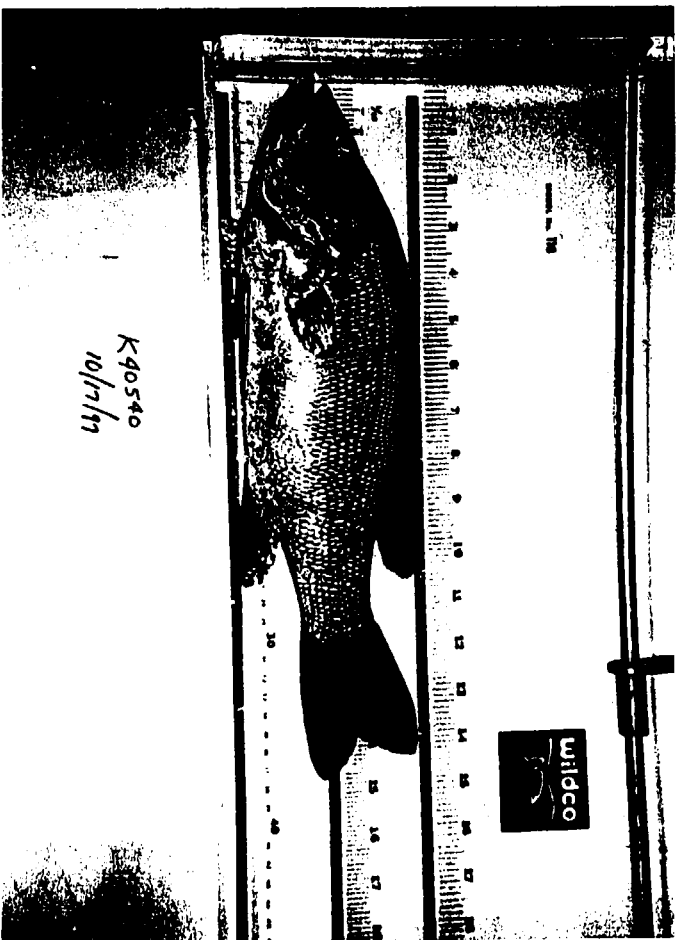
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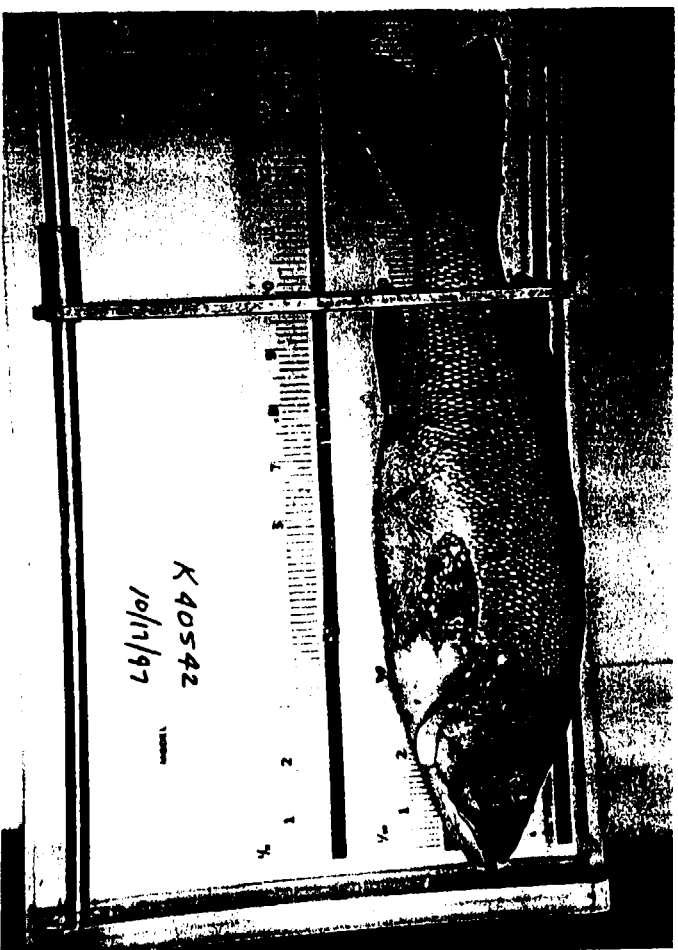


K40574

Adult Smallmouth Bass
(*Micropterus dolomieu*)

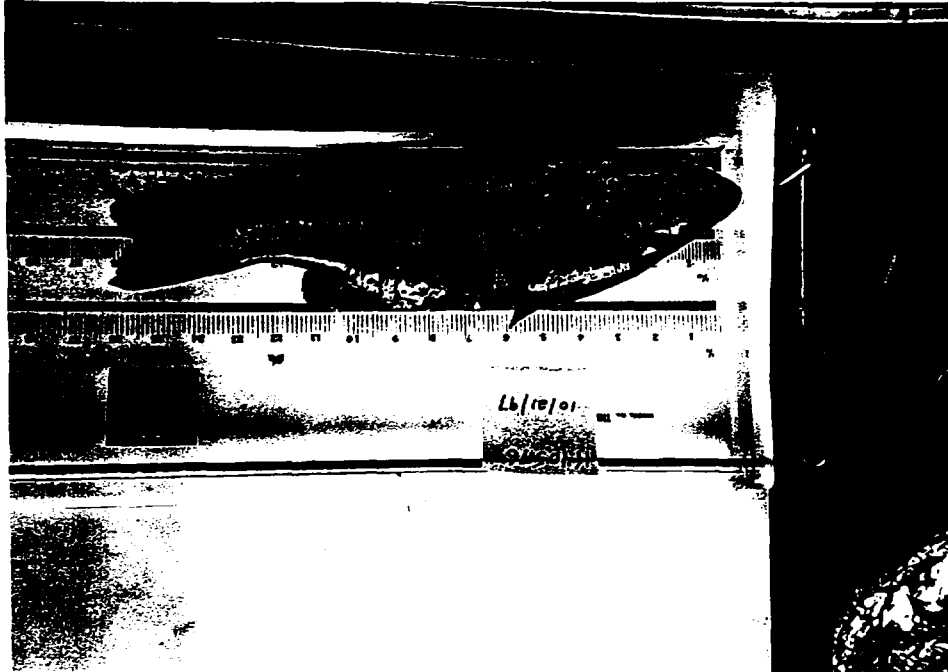


K40540

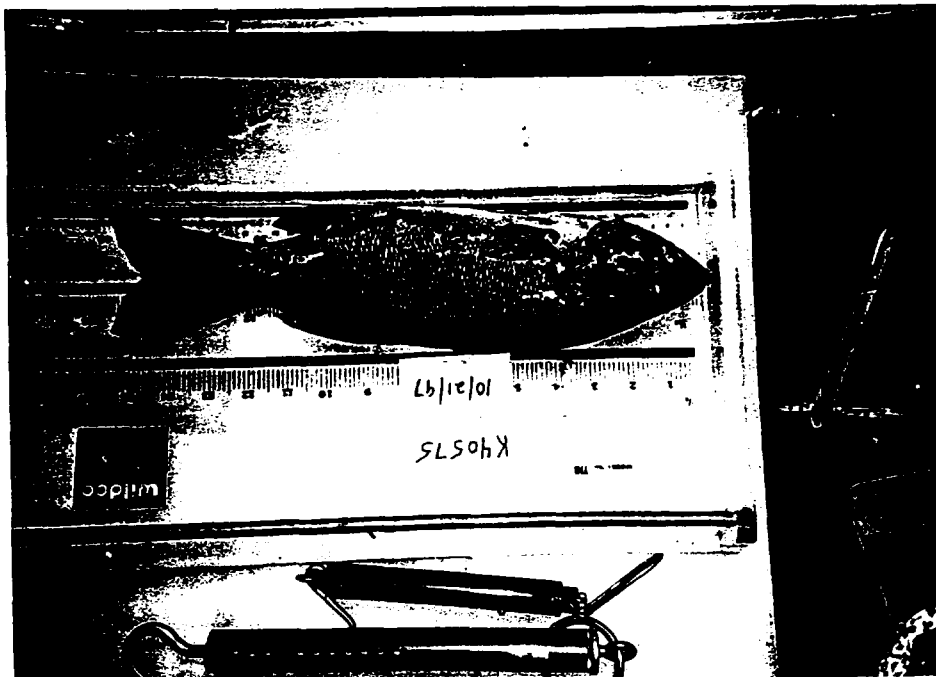


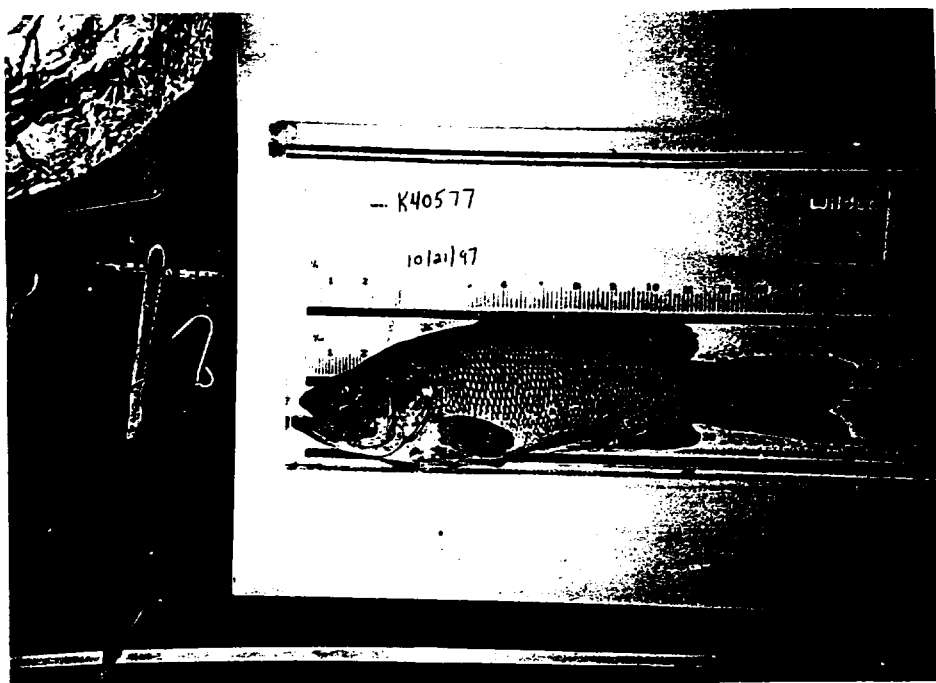
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K40576

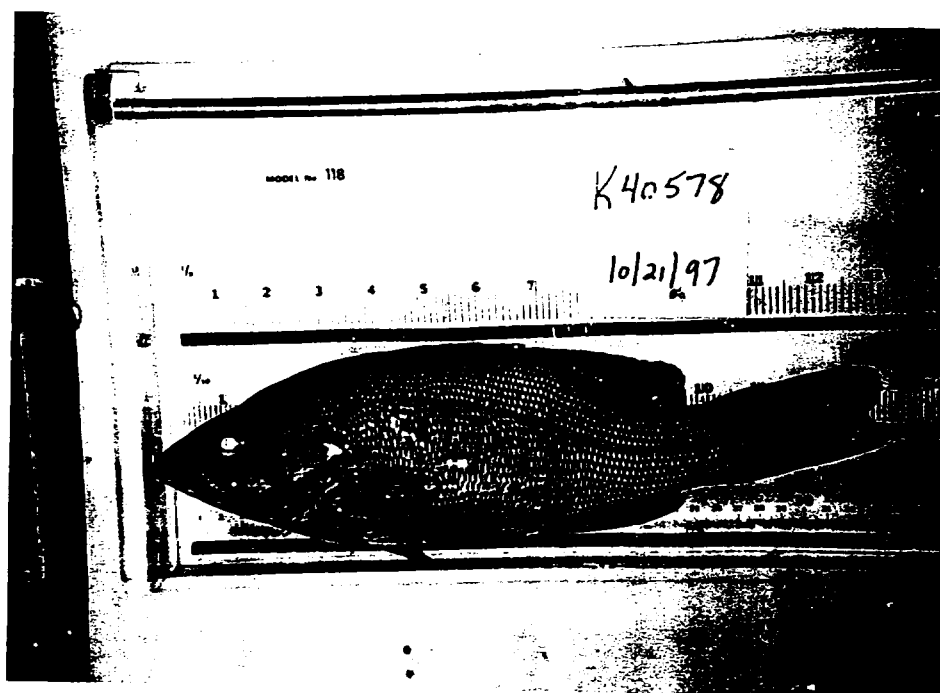


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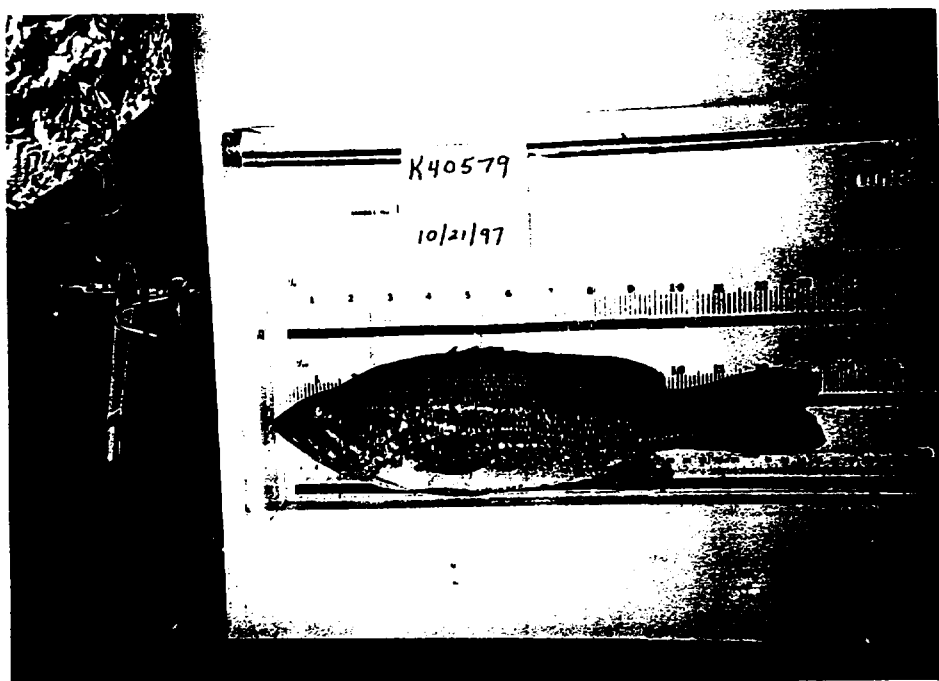




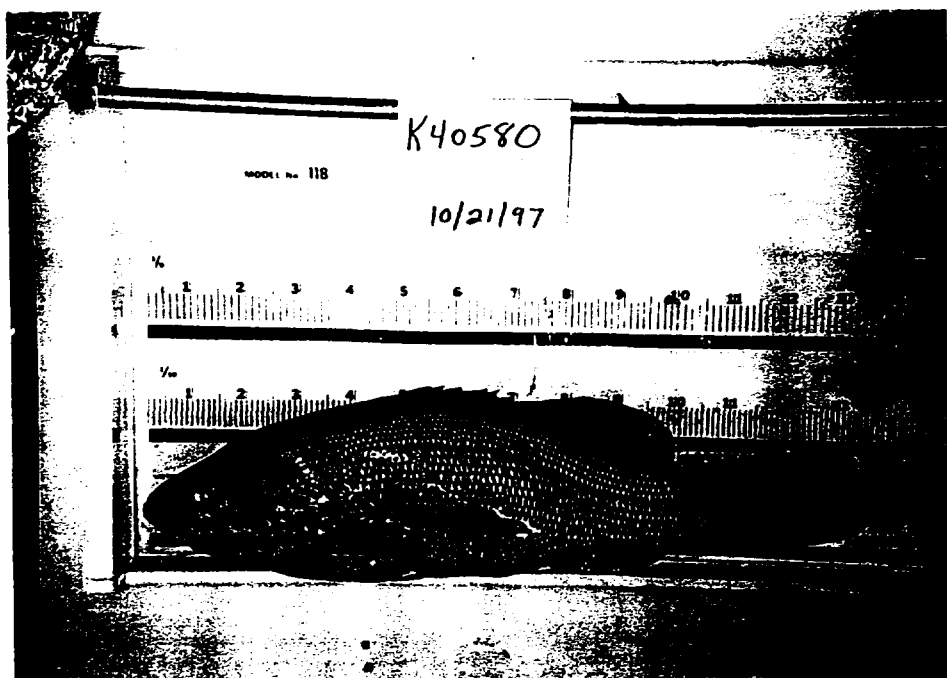
K40577



K40578



K40579



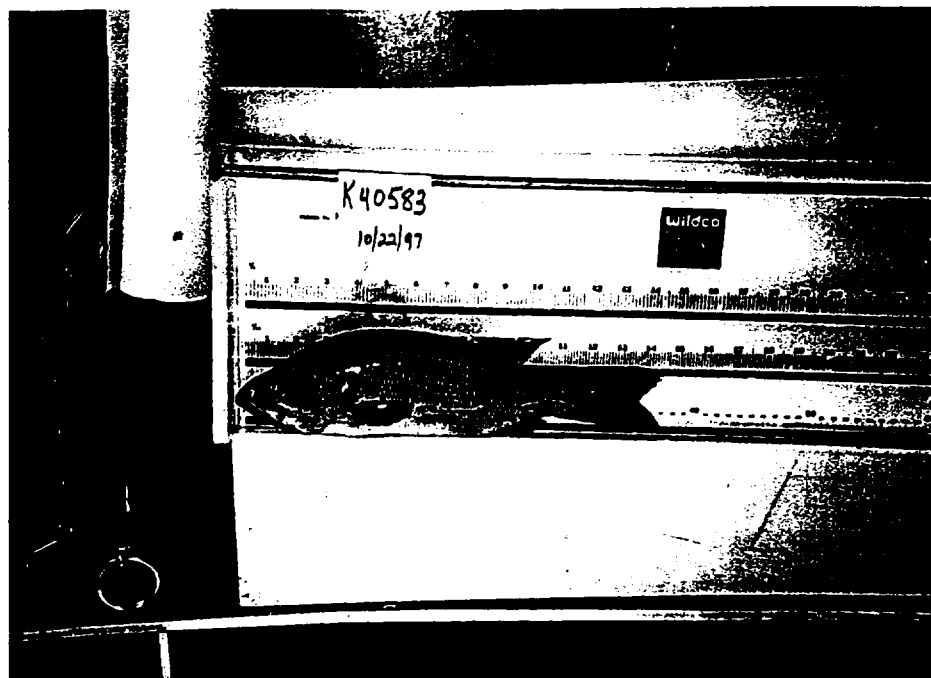
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K40581



K40582



K40583

ABSA #11

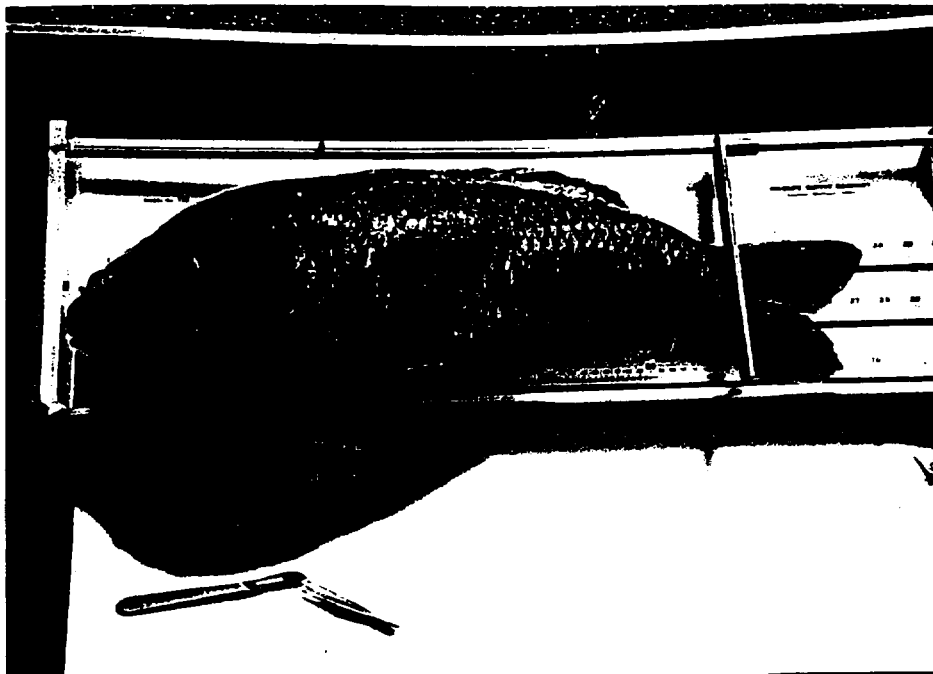
CARP

K40505
K40506
K40507
K40508
K40509
K40511
K40512
K40513
K40514
K40515
K40516
K40543

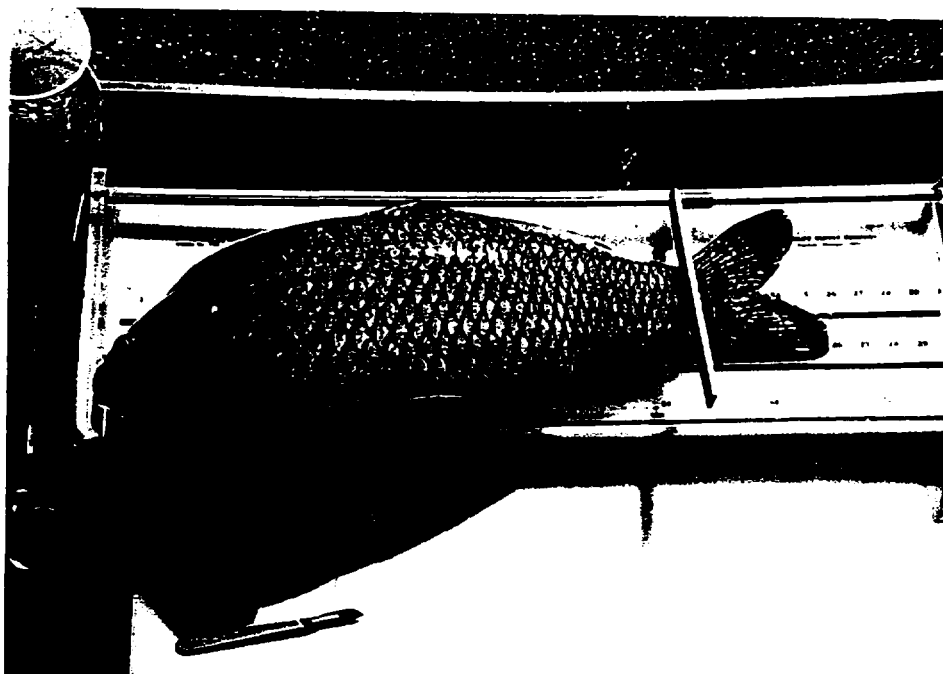
ADULT SMALLMOUTH BASS

K40500
K40502
K40544
K40545
K40546
K40547
K40548
K40549
K40550
K40613
K40614

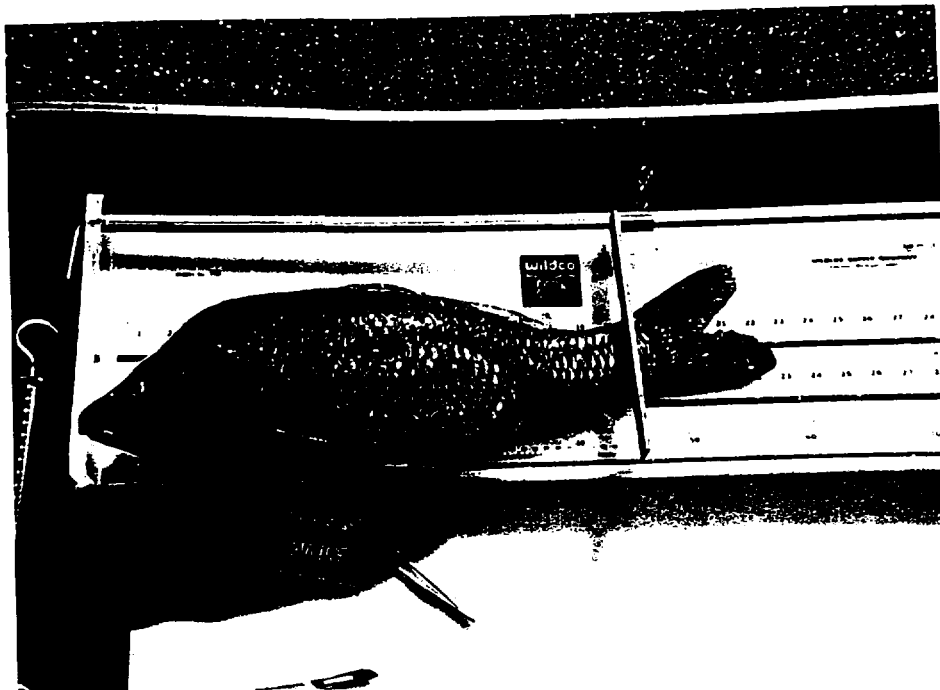
Carp
(*Cyprinus carpio*)



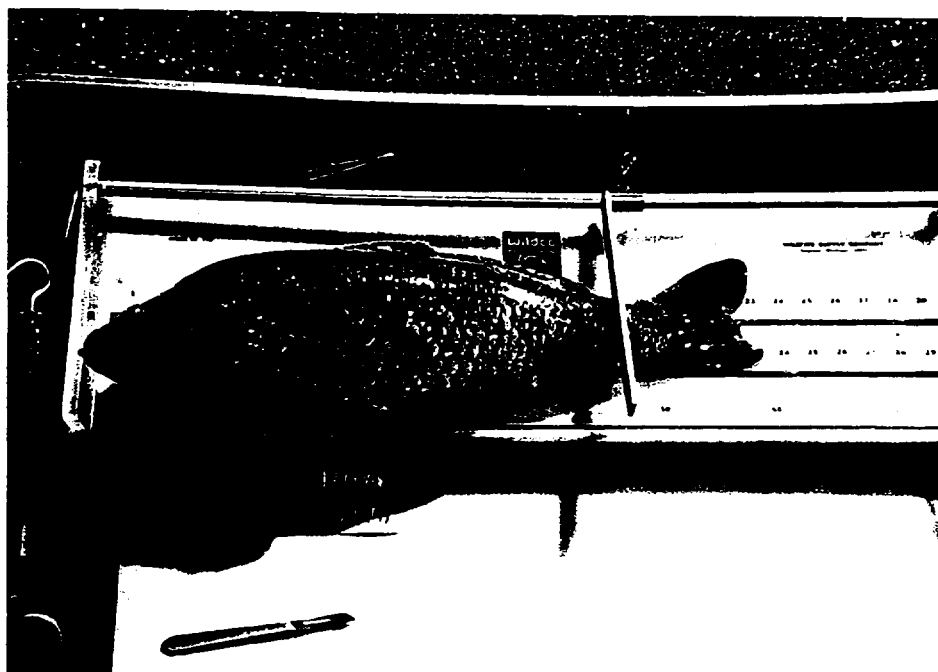
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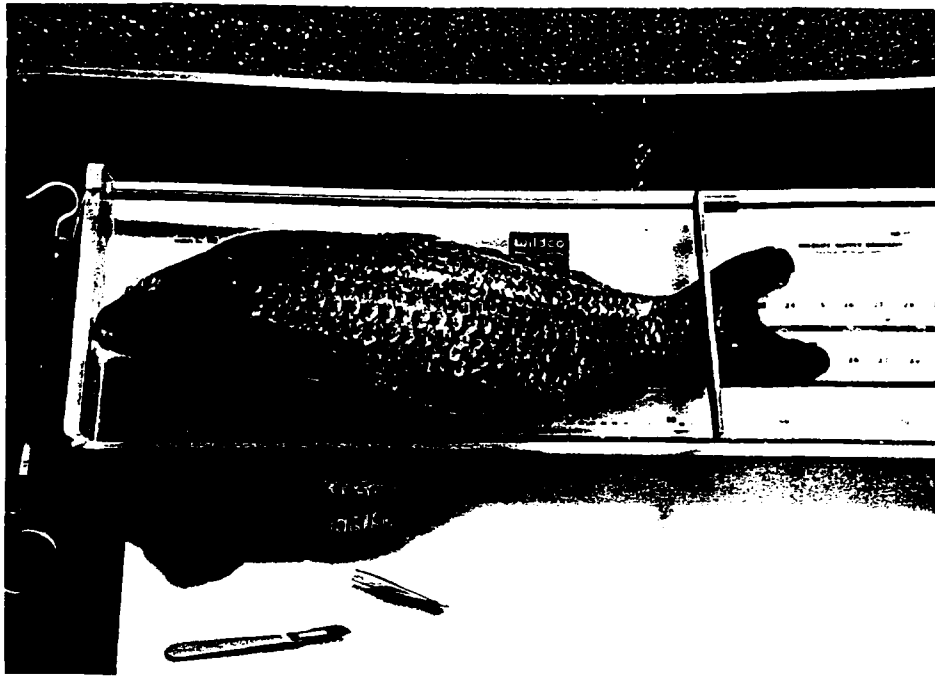
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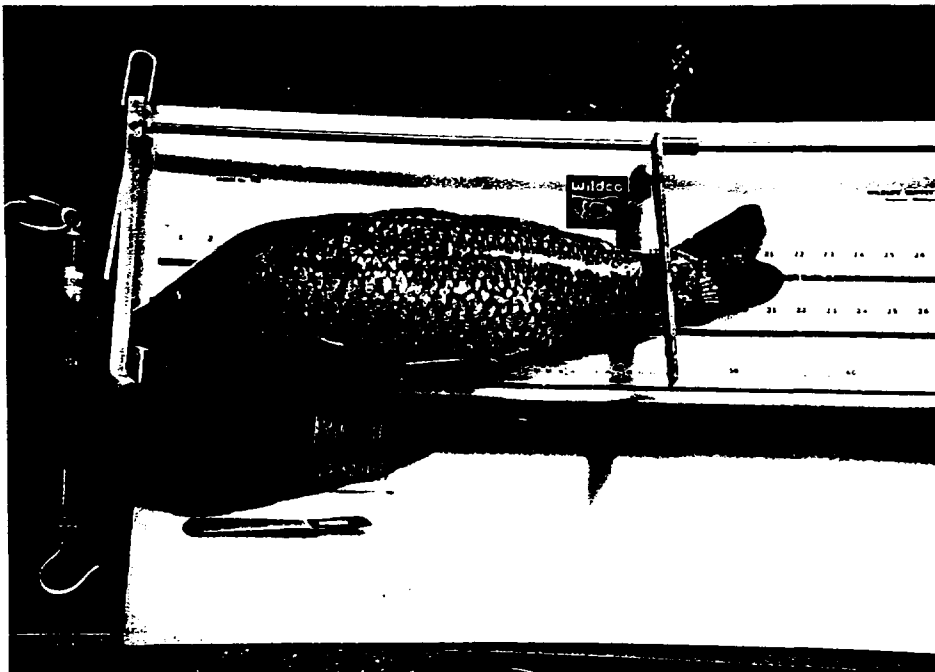
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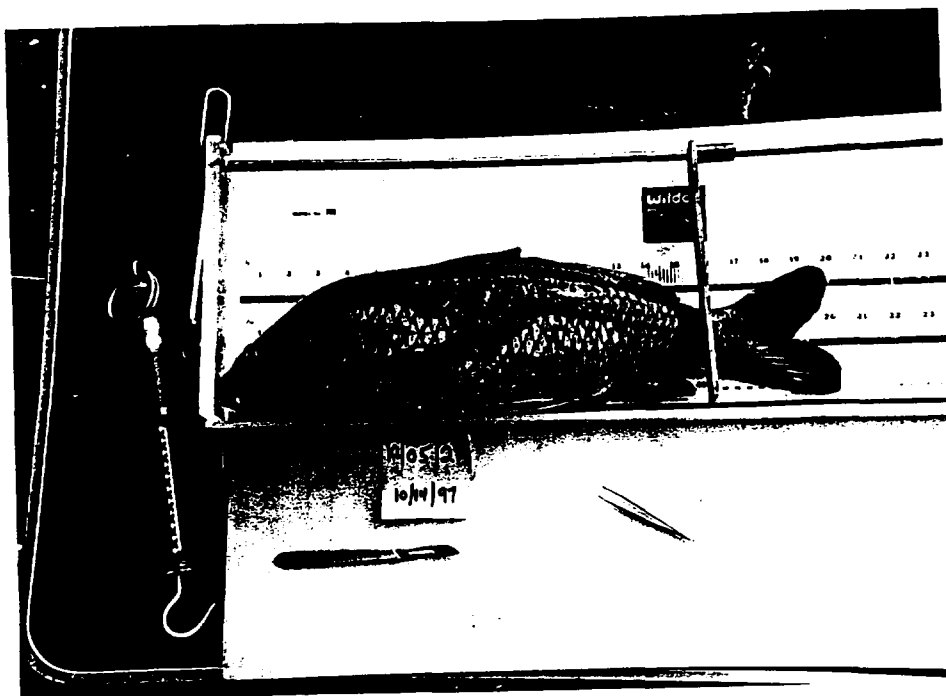
K40508



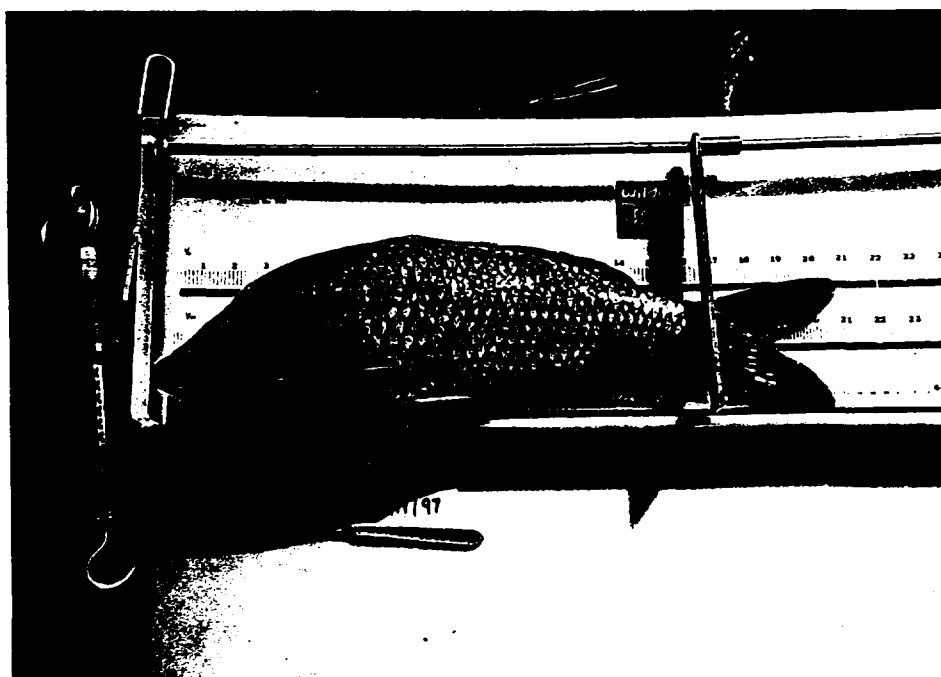
K40509



K40511

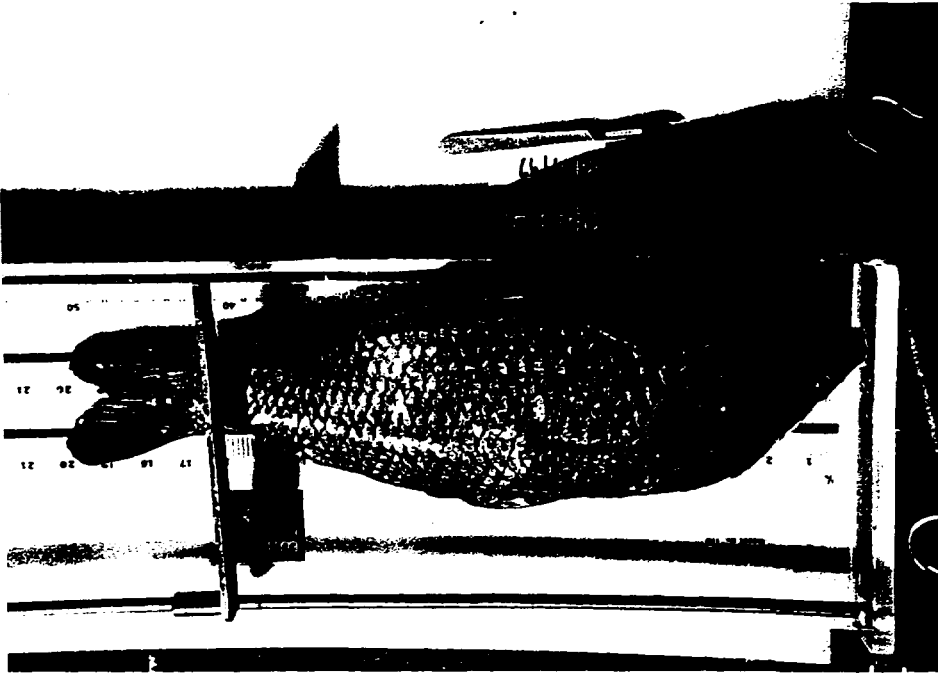


K40512

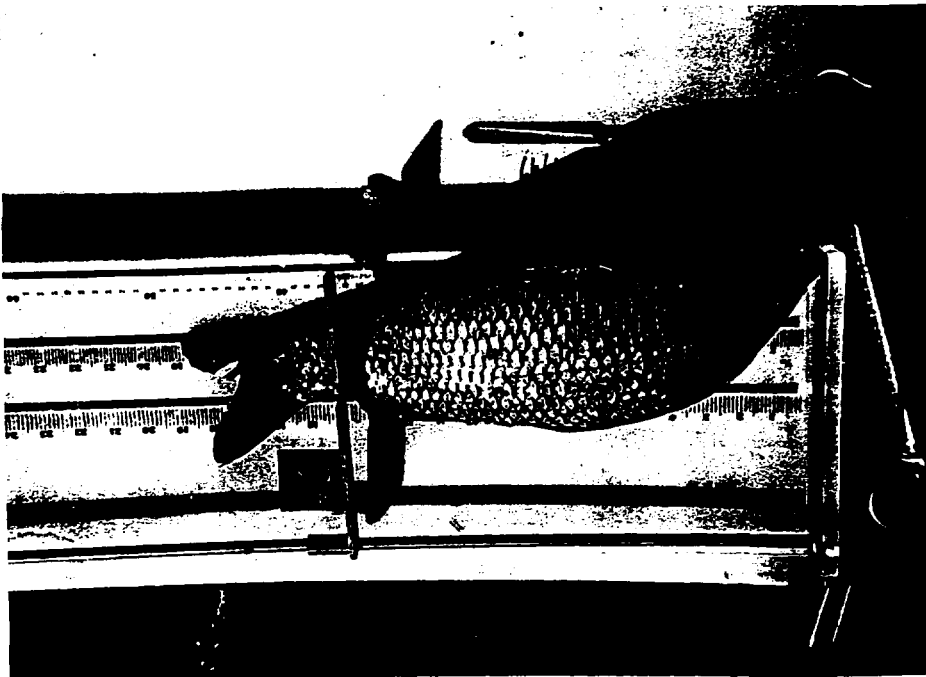


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K40515

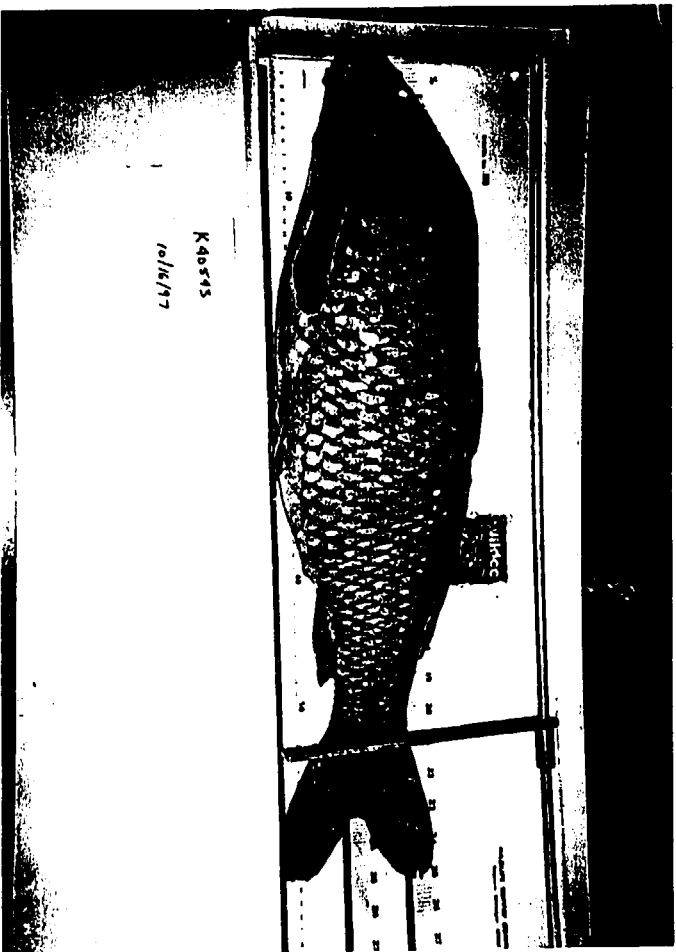


K40514





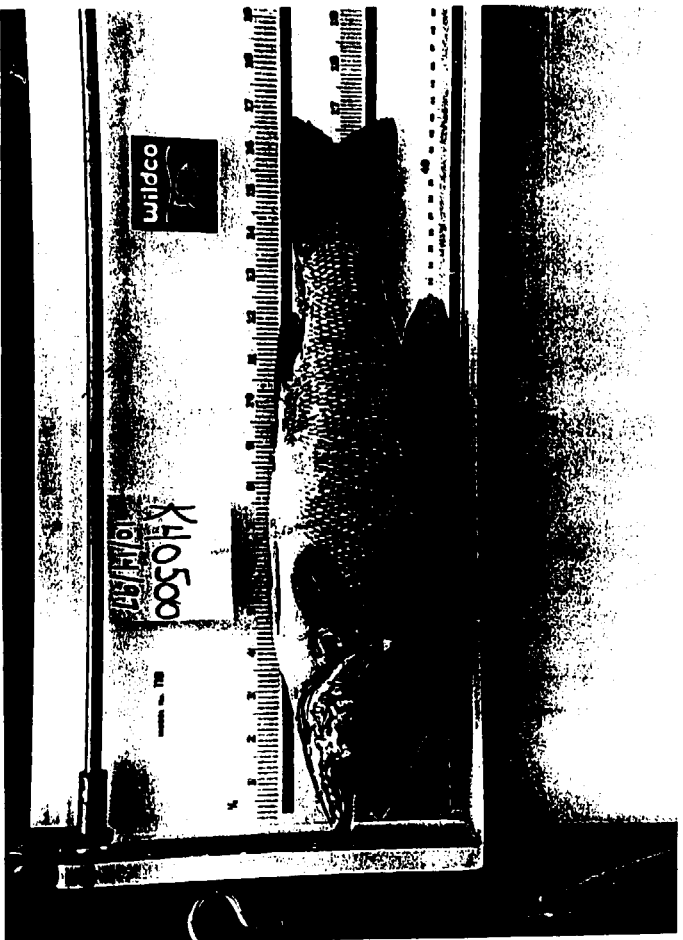
K40516



K40543
10/16/77

K40543

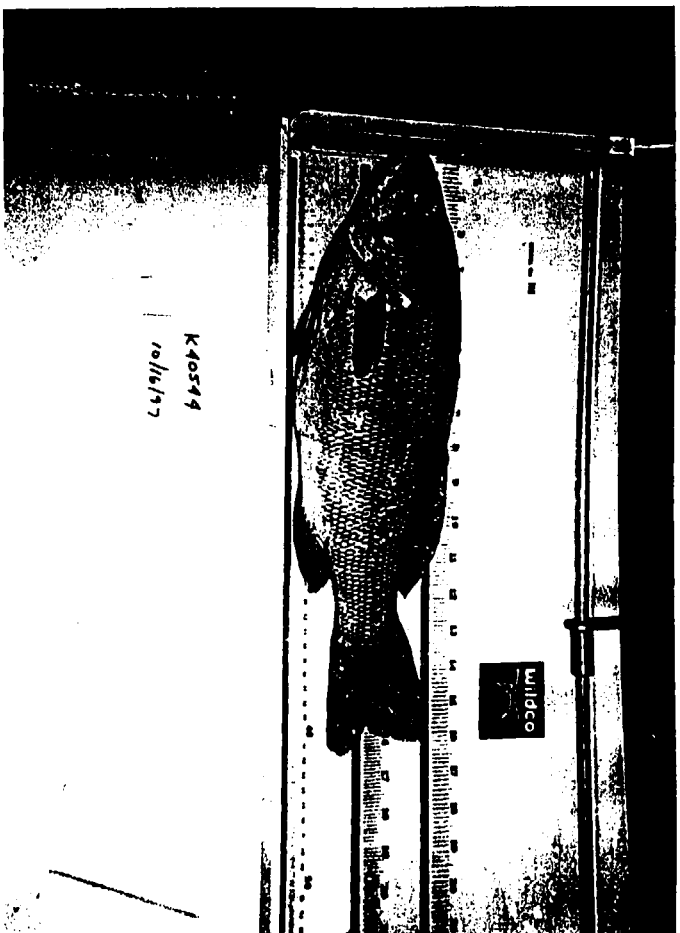
Adult Smallmouth Bass
(*Micropterus dolomieu*)



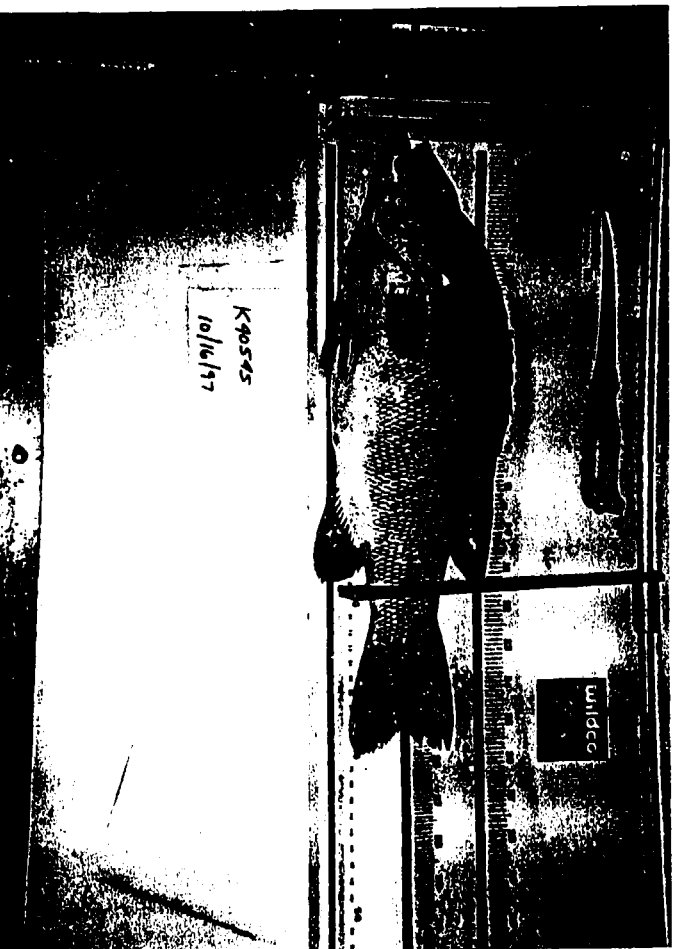
K40500



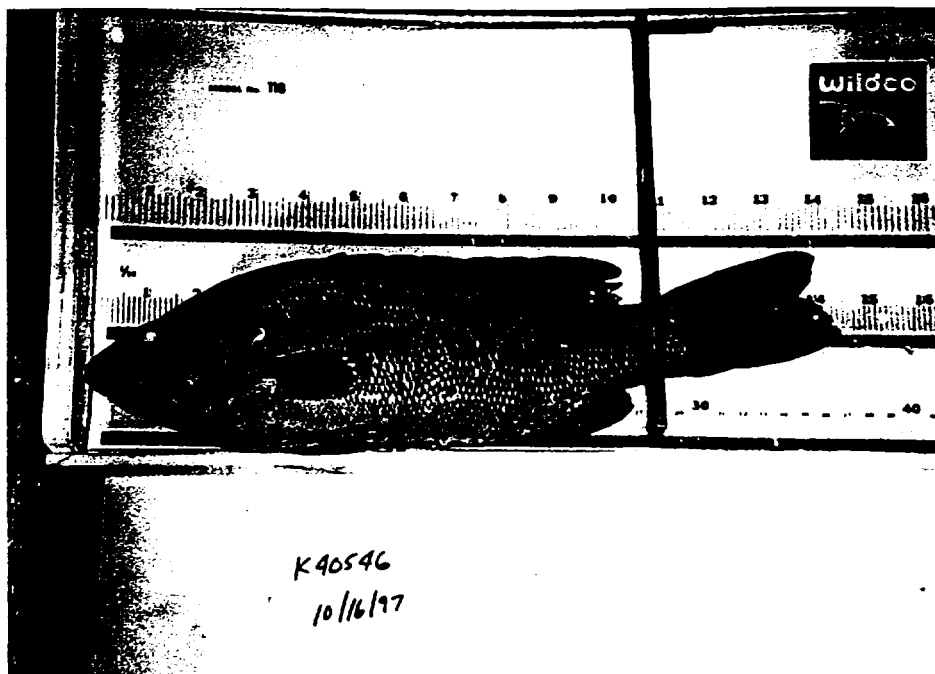
K40502



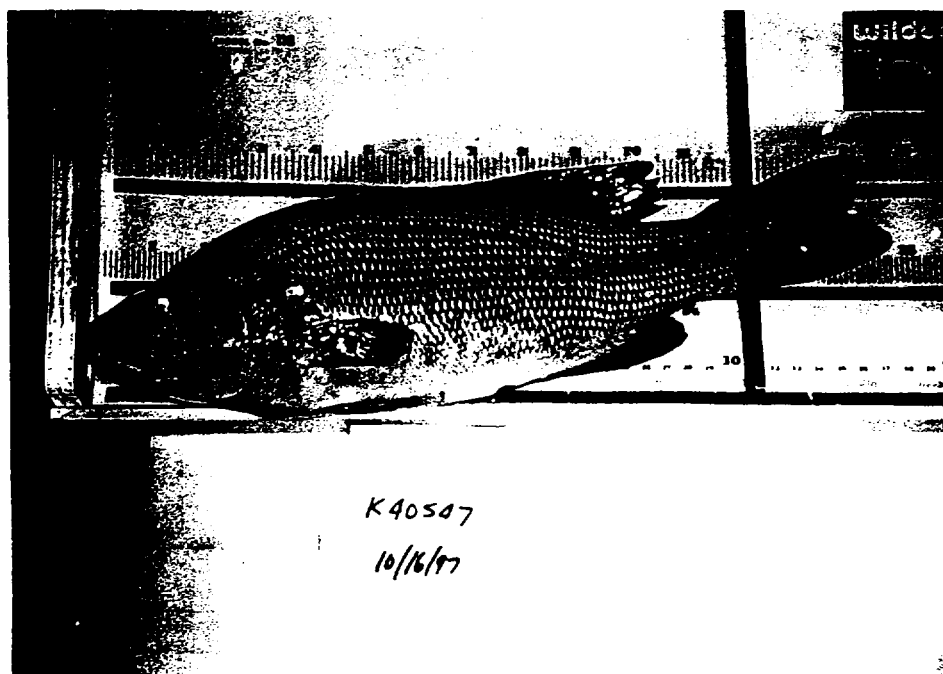
K40544



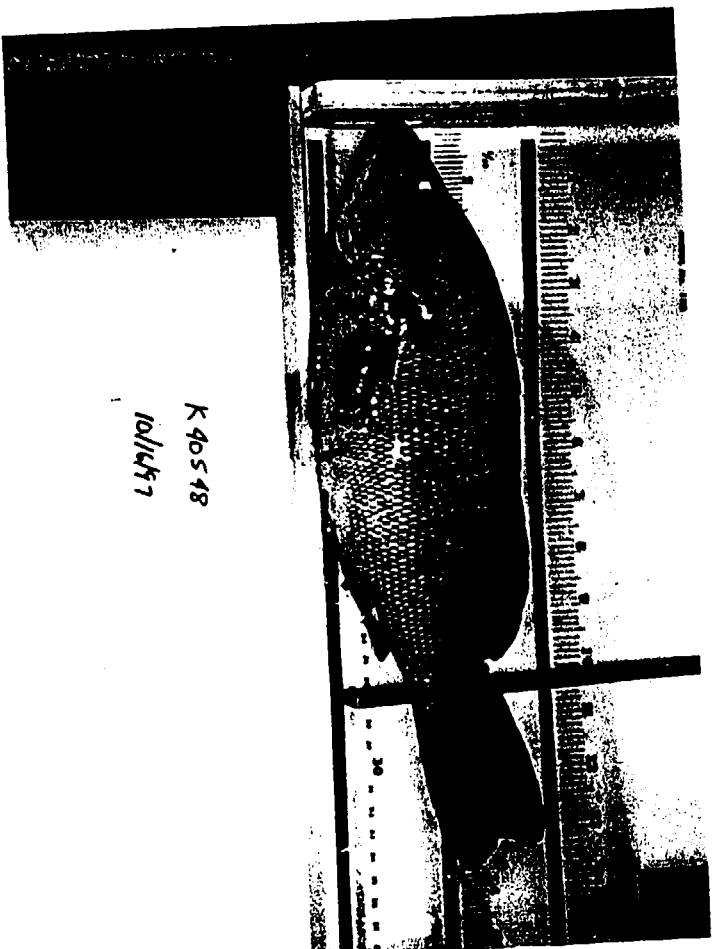
K40545



K40546



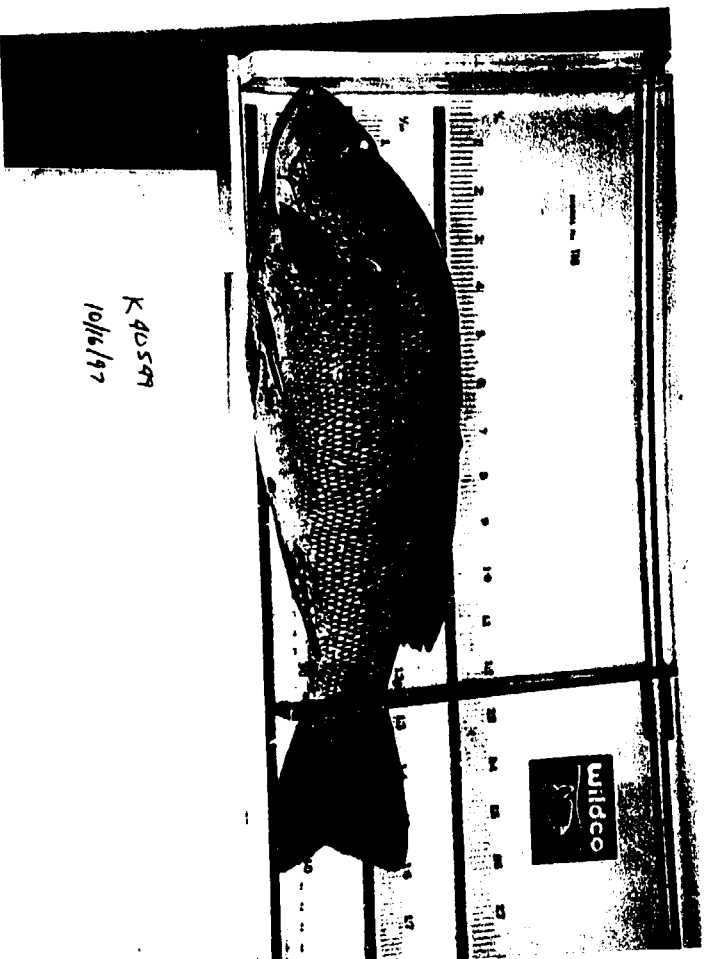
K40547



K 40548

10/14/97

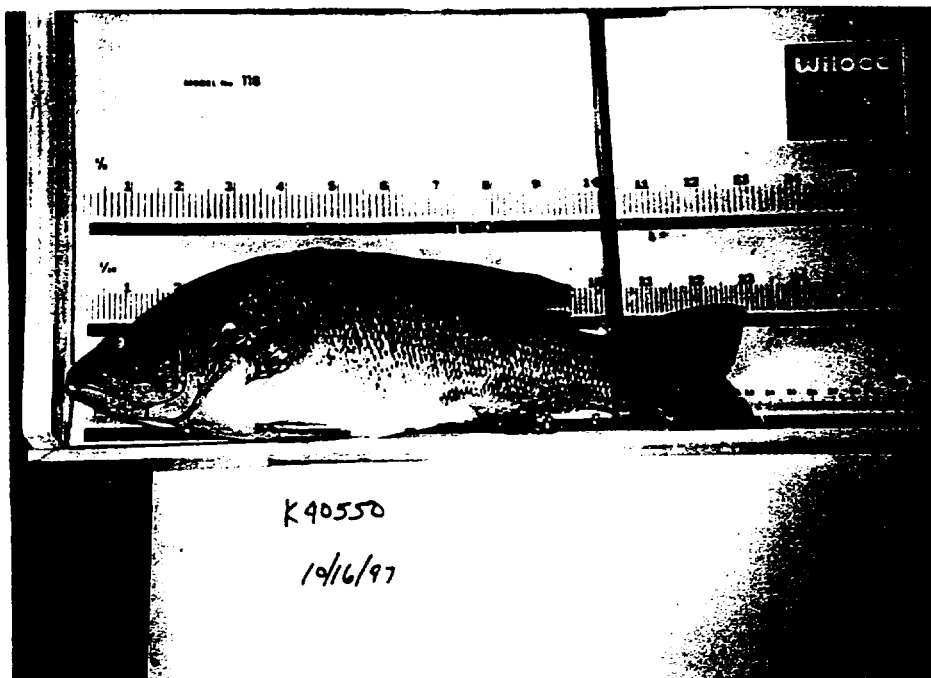
K40548



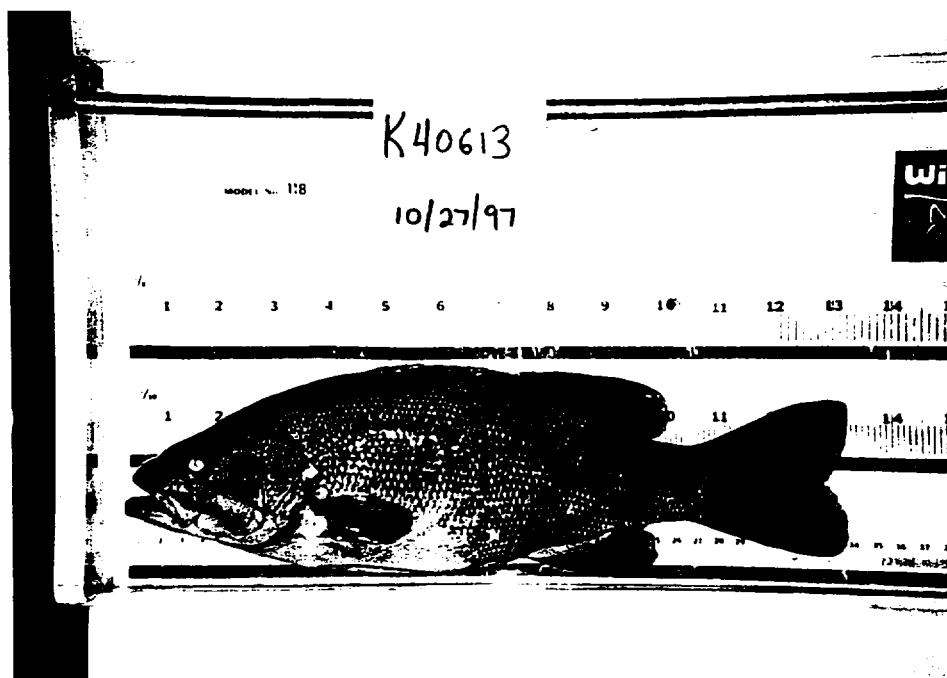
K 40549

10/16/97

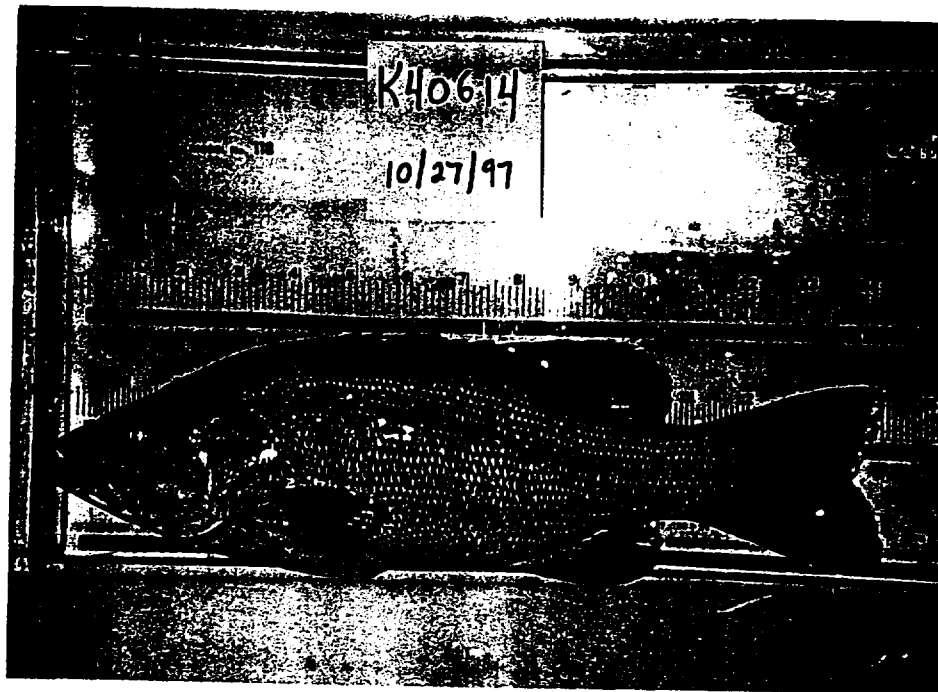
K40549



K40550



K40613



K40614

Appendix C

Chain-of-Custody Records

BLASLAND, BOUCK & LEE, INC.
engineers & scientists



| PROJ. NO. | | PROJECT NAME | | NO. OF CONTAINERS | | CHARTER OF CUSTODY RECORD | | | | | | | | REMARKS | |
|-------------------------------------|----------|-----------------|---|---|--|------------------------------|---|-------------|---|--------------------------|--|------------------------------|--|---|--------------------------|
| STATION NO. | | DATE | | | | TIME | | COMP. | | GRAB | | STATION LOCATION | | | |
| 64524711 | | Kalamazoo River | | Residue Fish | | | | | | | | | | | |
| SAMPLERS: (Signature) <i>Kelley</i> | | | | | | | | | | | | | | | |
| 40500 | 10/15/97 | 17:00 | | X | | New Richmond - AGSD #11 | 1 | X | X | | | | | Fillet and analyze for PCBs and dioxins/furans | |
| K40501 | | | | X | | | | | | | | | | discuss procedure | |
| K40502 | | | | X | | | | | | | | | | | |
| K40503C | | | X | | | | | | | | | | | Analyze for PCBs and dioxins/furans | |
| 0504-C1 | | | X | | | | | | | | | | | Return for combination of sediment samples | |
| 40512 | | | | X | | | | | | | | | | Fillet and analyze for PCBs and dioxins/furans | |
| 40513 | | | | | | | | | | | | | | procedure discussed previously | |
| 40514 | | | | | | | | | | | | | | | |
| 40515 | | | | | | | | | | | | | | * Do not run analysis of these samples. Hold homogenates in frozen storage until additional instructions are received regarding sample disposition KDS 11/24/97 | |
| 40516 | | | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | Relinquished by: (Signature) | | Date / Time | Received by: (Signature) |
| <i>Kelley</i> | | 10/15/97 17:00 | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | Relinquished by: (Signature) | | Date / Time | Received by: (Signature) |
| | | | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | Date / Time | | Received for Laboratory by: (Signature) | | Date / Time | | Remarks | | | | | | | |
| | | | | | | | | | | | | | | | |


Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

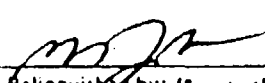
Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

[illegible]

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

CHAIN OF CUSTODY RECORD

| PROJ. NO. GAS24711 | | PROJECT NAME Kalamazoo River Resident Fish | | | | NO. OF CON- TAINERS | Whole Fish | P/Lbs (Anchovy) | 1/2 Lbs | | | | | | | | | | REMARKS |
|--|-------|---|--------------|------|-------------------------------|------------------------------|---------------|-----------------|---------|--|--|--|--|--|--|--|--|---|---------|
| SAMPLERS: (Signature)  | | | | | | | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COM- CODE | GRAB | STATION LOCATION | | | | | | | | | | | | | | |
| K40517-C | 10/15 | | X | | JUV. MURROW POND - AREA # 2 | 1 | X | X | | | | | | | | | | Analyze whole body composition. Fillet and analyze following analytical procedures discussed previously. | |
| K40518-C | 10/15 | | X | | | | | | | | | | | | | | | | |
| K40519-C | 10/15 | | X | | | | | | | | | | | | | | | | |
| K40520-C | 10/15 | | X | | | | | | | | | | | | | | | | |
| K40521 | | | | X | Murrow Pond Camp Area #2 | | | | | | | | | | | | | Fillet and analyze following analytical procedures discussed previously. | |
| K40522 | | | | | | | | | | | | | | | | | | | |
| K40523 | | | | | | | | | | | | | | | | | | Sample (Shrimp Fillets) similar (Shrimp) results on fillets. | |
| * K40524 | | | | | | | | | | | | | | | | | | * Do not run analysis of these fish. Hold homogenates in frozen storage until additional instructions are received regarding sample disposition. KNS 11/24/97 | |
| K40525 | | | | | | | | | | | | | | | | | | | |
| K40526 | | | | | | | | | | | | | | | | | | | |
| K40527 | | | | | Murrow Pond AREA #2 SM (fish) | | | | | | | | | | | | | | |
| K40528 | | | | | | | | | | | | | | | | | | | |
| K40529 | | | | | | | | | | | | | | | | | | | |

| | | | | | |
|---|-------------------------------|---|------------------------------|-------------|--------------------------|
| Relinquished by: (Signature)  | Date / Time 10/17/97 16:50 | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
| Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
| Relinquished by: (Signature) | Date / Time | Received for Laboratory by: (Signature) | Date / Time | Remarks | |

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engineers & scientists6723 Towpath Road, P.O. Box 66
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CHAIN OF CUSTODY RECORD

| PROJ. NO. | | PROJECT NAME | | Whole Fish | | Number of Containers | | PCB (Analysis) | | Lipids | | REMARKS | | | | | | | |
|------------------------------|----------|--------------|-------|------------|--|---|---|----------------|---|------------------------------|--|--|--|----------|------|------------------------------|--|--|--|
| SAMPLERS: (Signature) | | | | | | | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | | | | | | | | | | | | | | |
| K 40504-C2 | 10/14/97 | 10:00 | X | | New Richmond ABSA #11 Juvenile Sm Bass | | 1 | X | X | | | Combine K40504-C2 with K40504-C1 (provided earlier) | | | | | | | |
| K 40530-C | | | | | | | | | | | | Process all Juvenile bass composite samples as whole-body composites and analyze following analytical procedures discussed previously | | | | | | | |
| K 40531-C | | | | | | | | | | | | | | | | | | | |
| K 40532-C | | | | | | | | | | | | | | | | | | | |
| K 40533-C | 10/17/97 | 10:00 | X | | Lake Michigan ABSA #9 Juvenile Sm Bass | | | | | | | | | | | | | | |
| K 40534-C1 | " | " | " | | " | | | | | | | * 40534 Return C-1 to combine with 40534 C-2 which will follow at = 1. date | | | | | | | |
| K 40535 | 10/17/97 | 10:00 | | X | Lake Michigan ABSA #9 Adult Comp | | 1 | X | X | | | Fillet comp (skin-off fillets) and bass (skin-on, scales on fillets) and analyze fillets following analytical procedures discussed previously | | | | | | | |
| K 40536 | | | | | | | | | | | | | | | | | | | |
| K 40537 | | | | | | | | | | | | | | | | | | | |
| K 40538 | | | | | | | | | | | | | | | | | | | |
| K 40539 | | | | | | | | | | | | | | | | | | | |
| K 40540 | | | | | Lake Michigan ABSA #9 Adult Bass | | | | | | | | | | | | | | |
| ** K 40541 | | | | | | | | | | | | ** Do not run analysis of these samples. Hold homogenates in frozen storage until additional instructions are received regarding sample disposal | | | | | | | |
| K 40542 | | | | | | | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | | | DATE | TIME | Received by: (Signature) | | | | Relinquished by: (Signature) | | | | DATE | TIME | Relinquished by: (Signature) | | | |
| K 40542 | | | | 10/17/97 | K:30 | | | | | | | | | | | KOS 11/24/9 | | | |
| Relinquished by: (Signature) | | | | DATE | TIME | Received by: (Signature) | | | | Relinquished by: (Signature) | | | | DATE | TIME | Relinquished by: (Signature) | | | |
| Relinquished by: (Signature) | | | | DATE | TIME | Received for Laboratory by: (Signature) | | | | DATE | | TIME | | Remarks: | | | | | |



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CHAIN OF CUSTODY RECORD

| PROJ. NO. | | PROJECT NAME | | | | | | | | | | | | | |
|------------------------------|----------|--------------|-------|------|-------------------------------------|------------|---|------------------|------------------|------------------|------------------|--|------|----------|------------------------------|
| SAMPLERS: (Signature) | | | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP. | SRAB | STATION LOCATION | Whole Fish | Number of Containers | * PCBs (Aroclor) | * PCBs (Aroclor) | * PCBs (Aroclor) | * PCBs (Aroclor) | REMARKS | | | |
| K40543 | 10/14/97 | 15:00 | | X | New Richmond AROCLOR #11 Adult Corp | | | X | X | | | | | | |
| K40544 | 10/14/97 | 15:30 | | X | New Richmond AROCLOR #11 Adult Corp | | | X | X | | | Fillet and corp (skin-off fillets) and bass (skin-on, scales-on) and analyze fillets | | | |
| K40545 | | | | | | | | | | | | Following analytical procedures discussed previously. | | | |
| K40546 | | | | | | | | | | | | | | | |
| K40547 | | | | | | | | | | | | | | | |
| K40548 | | | | | | | | | | | | | | | |
| K40549 | | | | | | | | | | | | | | | |
| K40550 | | | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | | | | DATE | TIME | Received by: (Signature) | | | | | Relinquished by: (Signature) | DATE | TIME | Relinquished by: (Signature) |
| Relinquished by: (Signature) | | | | | DATE | TIME | Received by: (Signature) | | | | | Relinquished by: (Signature) | DATE | TIME | Relinquished by: (Signature) |
| Relinquished by: (Signature) | | | | | DATE | TIME | Received for Laboratory by: (Signature) | | | | | DATE | TIME | Remarks: | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files



CHAIN OF CUSTODY RECORD

10/23/95
5951188L.CDR

Distribution: Original Accompanies SH-100 report; Copy to Coordinator Field Files



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CHAIN OF CUSTODY RECORD

| PROJ. NO. | | PROJECT NAME | | | | | | | | | | | | | |
|------------------------------|---------|--------------|-------|------|-------------------------|------------|---|----------------|---------------|--|--|---|------|----------|------------------------------|
| SAMPLERS: (Signature) | | | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | Whole Fish | Number of Containers | PCBs (Aqueous) | PCBs (Lipids) | | | REMARKS | | | |
| K40552 | 10/2/97 | 15:00 | | X | Marengo Pond Adult Carp | I | X | X | | | | Eillet (Skin-off Eillet) and analyze Eillet following analytical procedures discussed previously. | | | |
| K40553 | I | I | | I | I | I | I | I | | | | I | | | |
| K40554 | I | I | | I | I | I | I | I | | | | | | | |
| K40555 | I | I | | I | I | I | I | I | | | | | | | |
| K40556 | I | I | | I | I | I | I | I | | | | | | | |
| K40557 | I | I | | I | I | I | I | I | | | | | | | |
| Relinquished by: (Signature) | | | | | DATE | TIME | Received by: (Signature) | | | | | Relinquished by: (Signature) | DATE | TIME | Relinquished by: (Signature) |
| Relinquished by: (Signature) | | | | | DATE | TIME | Received by: (Signature) | | | | | Relinquished by: (Signature) | DATE | TIME | Relinquished by: (Signature) |
| Relinquished by: (Signature) | | | | | DATE | TIME | Received for Laboratory by: (Signature) | | | | | DATE | TIME | Remarks: | |

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CHAIN OF CUSTODY RECORD

| PROJ. NO. | | PROJECT NAME | | SAMPLERS: (Signature) | | Whole Fish | | Number of Containers | | PCBs (Aroclor) | | Dioxins | | Remarks | |
|------------------------------|--|--------------|--|-----------------------|--|---|--|------------------------------|--|----------------|--|----------|--|--|--|
| STA. NO. | | DATE | | | | | | | | | | | | | |
| K40551-C | | 10/2/97 | | 16:00 | | X | | | | | | | | | |
| K40551-C | | 10/2/97 | | 16:00 | | X | | | | | | | | Analyze whole body composite samples following analytical procedures discussed previously | |
| K40564-C | | 10/2/97 | | 14:00 | | X | | | | | | | | | |
| K40565-C | | | | | | X | | | | | | | | | |
| K40566-C | | | | | | X | | | | | | | | | |
| K40567-C | | | | | | X | | | | | | | | | |
| K40558 | | 10/2/97 | | 16:00 | | | | X | | | | | | Fillet (Skin on Fillets) and analyze Fillet Samples following analytical procedures discussed previously | |
| K40559 | | | | | | | | | | | | | | | |
| K40560 | | | | | | | | | | | | | | | |
| K40561 | | | | | | | | | | | | | | | |
| K40562 | | | | | | | | | | | | | | | |
| K40563 | | | | | | | | | | | | | | | |
| K40575 | | 10/2/97 | | 10:00 | | | | | | | | | | Lake Allegany Bass | |
| K40576 | | | | | | | | | | | | | | | |
| K40577 | | | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | DATE | | TIME | | Received by: (Signature) | | Relinquished by: (Signature) | | DATE | | TIME | | Relinquished by: (Signature) | |
| K40577 | | 10/2/97 | | 12:00 | | | | | | | | | | | |
| Relinquished by: (Signature) | | DATE | | TIME | | Received by: (Signature) | | Relinquished by: (Signature) | | DATE | | TIME | | Relinquished by: (Signature) | |
| Relinquished by: (Signature) | | DATE | | TIME | | Received for Laboratory by: (Signature) | | DATE | | TIME | | Remarks: | | | |

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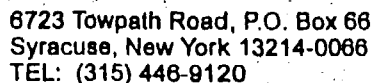
CHAIN OF CUSTODY RECORD

| PROJ. NO. | | PROJECT NAME | | STATION LOCATION | | Number of Containers | | Remarks | | |
|------------------------------|----------------------------------|--------------|-------|---|----------------------|------------------------------|------|----------|---|------------------------------|
| SAMPLERS: (Signature) | | | | | | Analysis | | | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | | | | | | |
| 64524711 | Shabagan River NRP Resident Fish | | | | Whole Fish | | | | | |
| K40578 | 10/21/97 | 12:00 | | X | Lake Allegan Sm Bass | 1 | X | X | Fillet (skin on, scales on) and analyze fillets | |
| K40579 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | Following analytical procedures discussed | |
| K40580 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | previously | |
| K40581 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | | |
| Relinquished by: (Signature) | | DATE | TIME | Received by: (Signature) | | Relinquished by: (Signature) | | DATE | TIME | Relinquished by: (Signature) |
| Relinquished by: (Signature) | | DATE | TIME | Received by: (Signature) | | Relinquished by: (Signature) | | DATE | TIME | Relinquished by: (Signature) |
| Relinquished by: (Signature) | | DATE | TIME | Received for Laboratory by: (Signature) | | DATE | TIME | Remarks: | | |

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CHAIN OF CUSTODY RECORD

| PROJ. NO. | | PROJECT NAME | | Whole Fish | | Number of Containers | | PCBs (Aroclor) | | No Lipids | | | | | | | | | | REMARKS | |
|------------------------------|----------|-------------------------------|-------|------------|---------------------------|---|---|------------------------------|---|-----------|--|----------|------|------------------------------|--|--|--|--|--|--|--|
| 645.74.71 | | Kalamazoo River Resident Fish | | | | | | | | | | | | | | | | | | | |
| SAMPLERS: (Signature) | | | | | | | | | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | | | | | | | | | | | | | | | | |
| K40589 | 10/23/97 | 14:30 | | X | Marshall Dam - Adult carp | | 1 | X | X | | | | | | | | | | | Fillet carp (skin-off) and analyze fillets following analytical procedures discussed previously. | |
| K40590 | | | | | | | | | | | | | | | | | | | | | |
| K40591 | | | | | | | | | | | | | | | | | | | | | |
| K40592 | | | | | | | | | | | | | | | | | | | | | |
| K40593 | | | | | | | | | | | | | | | | | | | | | |
| K40594 | | | | | | | | | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | | | DATE | TIME | Received by: (Signature) | | Relinquished by: (Signature) | | | | DATE | TIME | Relinquished by: (Signature) | | | | | | | |
| K40594 | | | | 10/24/97 | 16:30 | | | | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | | | DATE | TIME | Received by: (Signature) | | Relinquished by: (Signature) | | | | DATE | TIME | Relinquished by: (Signature) | | | | | | | |
| Relinquished by: (Signature) | | | | DATE | TIME | Received for Laboratory by: (Signature) | | DATE | | TIME | | Remarks: | | | | | | | | | |



CHAIN OF CUSTODY RECORD

[illegible]

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CHAIN OF CUSTODY RECORD

| PROJ. NO. | | PROJECT NAME | | STATION LOCATION | | Whole Fish | | Number of Containers | | P(A): (Aqueous) | | B: Lipids | | REMARKS | | |
|------------------------------|----------|--------------|-------|------------------|------------------------------|------------|---|----------------------|---|-----------------|--|-----------|--|---|------------------------------|--|
| SAMPLERS: (Signature) | | | | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | | | | | | | | | | | | |
| 40609-C | 10/23/97 | 13:30 | X | | Pleasant Dam - Juvenile Bass | | | X | X | | | | | Analyze whole body composite samples following analytical procedures discussed previously | | |
| 40610-C | 1 | 1 | X | | ↓ | | | | | | | | | ↓ | | |
| 40611-C | 1 | 1 | X | | | | | | | | | | | | | |
| 40612-C | 1 | 1 | X | | | | | | | | | | | | | |
| 40582 | 10/24/97 | 17:00 | | X | Lake Allegan - Adult Bass | | | | | | | | | Filter bass (5/500-cc, 500-cc filter) and analyze fillets as directed above | | |
| 40583 | " | " | | X | " " | | | | | | | | | | | |
| 40534-C | " | " | X | | Lake Allegan - Juvenile Bass | | | | | | | | Combine with sample 40534-C1 and analyze whole-body composite sample as directed above | | | |
| Relinquished by: (Signature) | | | | | DATE | TIME | Received by: (Signature) | | | | | DATE | | TIME | Relinquished by: (Signature) | |
| Relinquished by: (Signature) | | | | | DATE | TIME | Received by: (Signature) | | | | | DATE | | TIME | Relinquished by: (Signature) | |
| Relinquished by: (Signature) | | | | | DATE | TIME | Received for Laboratory by: (Signature) | | | | | DATE | | TIME | Remarks: | |



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CHAIN OF CUSTODY RECORD

| PROJ. NO. 64577.711 | | PROJECT NAME Kalamazoo River Resident Fish | | | | Whole Fish | Number of Containers | PCBs (Analytes) | D. Lipids | | | | | | | REMARKS | | | |
|--|----------|---|-------|------|-------------------------------|---------------|---|-----------------|-----------|--|--|------------------------------|--|------|--|---|------|------|------------------------------|
| SAMPLERS: (Signature) <i>[Signature]</i> | | | | | | | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | | | | | | | | | | | | | | |
| K40505 | 10/11/97 | 12:30 | | X | N. Richmond Mill Creek | | X | X | | | | | | | | Fillet corp (skin-off fillets) and bass (skin on, scales-on fillets) and analyze fillets | | | |
| K40516 | | | | | Plainwell Dam - Adult Bass | | | | | | | | | | | Following analytical procedures discussed previously. | | | |
| K40597 | | | | | | | | | | | | | | | | | | | |
| K40598 | | | | | | | | | | | | | | | | | | | |
| K40599 | | | | | | | | | | | | | | | | | | | |
| K40600 | | | | | | | | | | | | | | | | | | | |
| K40601 | | | | | | | | | | | | | | | | | | | |
| K40602 | | | | | | | | | | | | | | | | | | | |
| K40603 | | | | | | | | | | | | | | | | | | | |
| *K40604 | | | | | | | | | | | | | | | | * Do not run analysis of these samples. Hold homogenates in frozen storage until additional instructions are received regarding sample disposition KOS 11/24/97 | | | |
| K40605 | | | | | | | | | | | | | | | | | | | |
| K40606 | | | | | | | | | | | | | | | | | | | |
| K40607 | | | | | | | | | | | | | | | | | | | |
| K40608-c | | | | X | Plainwell Dam - Juvenile Bass | | | | | | | | | | | Analyze whole body composite as directed above | | | |
| Relinquished by: (Signature) <i>[Signature]</i> | | | | | DATE 10/24/97 | TIME 17:30 | Received by: (Signature) | | | | | Relinquished by: (Signature) | | | | | DATE | TIME | Relinquished by: (Signature) |
| Relinquished by: (Signature) | | | | | DATE | TIME | Received by: (Signature) | | | | | Relinquished by: (Signature) | | | | | DATE | TIME | Relinquished by: (Signature) |
| Relinquished by: (Signature) | | | | | DATE | TIME | Received for Laboratory by: (Signature) | | | | | DATE | | TIME | | Remarks: | | | |

CHAIN OF CUSTODY RECORD

| PROJ. NO. | | PROJECT NAME | | | | NO. OF CON- TAINERS | <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 5px; transform: rotate(-45deg); margin-right: 10px;">Whole Fish</div> <div style="border: 1px solid black; padding: 5px; transform: rotate(-45deg); margin-right: 10px;">PCAS (Alcohol)</div> <div style="border: 1px solid black; padding: 5px; transform: rotate(-45deg); margin-right: 10px;">TB Lipids</div> <div style="border: 1px solid black; padding: 5px; transform: rotate(-45deg); margin-right: 10px;"></div> <div style="border: 1px solid black; padding: 5px; transform: rotate(-45deg); margin-right: 10px;"></div> <div style="border: 1px solid black; padding: 5px; transform: rotate(-45deg); margin-right: 10px;"></div> <div style="border: 1px solid black; padding: 5px; transform: rotate(-45deg); margin-right: 10px;"></div> <div style="border: 1px solid black; padding: 5px; transform: rotate(-45deg); margin-right: 10px;"></div> <div style="border: 1px solid black; padding: 5px; transform: rotate(-45deg); margin-right: 10px;"></div> <div style="border: 1px solid black; padding: 5px; transform: rotate(-45deg); margin-right: 10px;"></div> </div> | | | | | | REMARKS |
|------------------------------|-------|--------------|----------------|------|---|---|---|---|---------|-------------|--|--------------------------|---------|
| SAMPLERS: (Signature) | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | | | | | | | | |
| * K40618 | 11/28 | 14:10 | | X | Battle Creek Mill Pond | 1 | X | X | | | | | |
| * K40619 | | | | | | | | | | | | | |
| * K40620 | | | | | | | | | | | | | |
| * K40621 | | | | | | | | | | | | | |
| * K40622 | | | | | | | | | | | | | |
| K40623 | | | | | | | | | | | | | |
| K40624 | | | | | | | | | | | | | |
| K40625 | | | | | | | | | | | | | |
| K40626 | | | | | | | | | | | | | |
| K40627 | | | | | | | | | | | | | |
| K40628 | | | | | | | | | | | | | |
| * K40629 | | | | | | | | | | | | | |
| | | | | | | <p>* Do not run analysis of these samples Hold homogenates in frozen storage until additional instructions are received regarding sample disposition.</p> | | | | | | | |
| Relinquished by: (Signature) | | | Date / Time | | Received by: (Signature) | | Relinquished by: (Signature) | | | Date / Time | | Received by: (Signature) | |
| K40629 | | | 11/29/97 14:50 | | | | | | | | | | |
| Relinquished by: (Signature) | | | Date / Time | | Received by: (Signature) | | Relinquished by: (Signature) | | | Date / Time | | Received by: (Signature) | |
| | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | | Date / Time | | Received for Laboratory by: (Signature) | | Date / Time | | Remarks | | | | |
| | | | | | | | | | | | | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

sample dis-
position.
KOS
11/24/97



BLASLAND & BOUCK
ENGINEERS, P.C.

CHAIN OF CUSTODY RECORD

| PROJ. NO. | | PROJECT NAME | | | | NO. OF CONTAINERS | ANALYSIS TYPE | | | | | | REMARKS |
|------------------------------|--|------------------------------------|-------|---|-------|------------------------------|----------------------------|------------------|------------|--------------------------|-----------|--|---|
| SAMPLERS: (Signature) | | STA. NO. | DATE | TIME | COMP. | | GRAB | STATION LOCATION | Whole Fish | PAH (Alkaline) | 16 Lipids | | |
| 64524711 | | Kalamazoo River NRMP Resident Fish | | | | | | | | | | | |
| K40613 | | 10/27 | 14:00 | | | X | New Richmond Adult Sm Bass | X | X | | | | Fillet (Skin-on, scales-on fillets) and |
| K40614 | | " | " | | | " | " | " | " | | | | analyze fillets following analytical |
| K40615 | | 10/28 | 9:00 | | | X | Morton Pond Adult Sm Bass | " | " | | | | procedures discussed previously. |
| * K40616 | | ↓ | ↓ | | | ↓ | ↓ | ↓ | ↓ | | | | * Do not run analysis of these samples. Hold homogenates in |
| K40617 | | ↓ | ↓ | | | ↓ | ↓ | ↓ | ↓ | | | | Frozen storage until additional instructions are received |
| K40631-C | | 10/28 | 14:00 | | X | | Bottle Creek Juvenile Bass | X | X | | | | requiring sample disposition KOS 11/24/97 |
| K40631-C1 | | " | " | | X | | " | X | X | | | | analyze whole body fillet samples |
| K40631-C2 | | 11/11 | " | | X | | Bottle Creek Juvenile Bass | X | X | | | | following analytical procedures |
| K40632-C1 | | 11/12 | ↓ | | ↓ | | ↓ | ↓ | ↓ | | | | discussed previously. |
| K40632-C2 | | 11/22 | ↓ | | ↓ | | ↓ | ↓ | ↓ | | | | ↓ |
| K40634-C1 | | 11/22 | ↓ | | ↓ | | ↓ | ↓ | ↓ | | | | ↓ |
| K40635 | | 10/27 | 11:00 | | X | X | Bottle Creek Adult Bass | X | X | | | | Fillet (skin-on, scales-off) and |
| K40636 | | ↓ | ↓ | | ↓ | | ↓ | ↓ | ↓ | | | | analyze fillets following analytical |
| K40637 | | ↓ | ↓ | | ↓ | | ↓ | ↓ | ↓ | | | | procedures discussed previously. |
| Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | | |
| K40638 | | 10/29/97 17:00 | | | | | | | | | | | |
| Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | | |
| | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | Date / Time | | Received for Laboratory by: (Signature) | | Date / Time | | Remarks | | | | | |
| | | | | | | | | | | | | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files



CHAIN OF CUSTODY RECORD

[illegible]

Appendix D

QA/QC Review of Data

Summary of Precision and Accuracy Assessment

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Appendix D

QA/QC Review of Data - Summary of Precision and Accuracy Assessment Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site

Data packages for eight sample delivery groups (SDGs), designated FISH01, FISH02, FISH03, FISH04, FISH05, FISH06, FISH07 and FISH08, containing biota sample data for PCBs were reviewed and evaluated for analytical precision and accuracy. It should be noted that some SDGs included whole-body composite samples. Since the SDGs were analyzed and reported as a group, the QA/QC review of the results also addressed the entire SDG. Therefore, although not presented in the Technical Memorandum Addendum, the whole-body composite sample results are included in the following summary, as well as the laboratory data sheets provided in Appendix E of this document.

Analytical precision for biota samples was assessed by comparing the relative percent differences (RPDs) between percent recoveries for the matrix spike (MS) and matrix spike duplicate (MSD) samples.

Matrix spike recovery and other indicators of accuracy, such as surrogate spike and laboratory control sample (LCS) recoveries, were examined to assess the analytical method's accuracy for all matrixes.

An overall precision and accuracy summary, as assessed through the review of QA/QC information including MS and MSD recoveries, RPD values for MS/MSD recoveries, surrogate spike recoveries, laboratory control sample (LCS) recoveries and blank performance, is present below. A more detailed analysis of data quality can be found in the Laboratory Data Review Reports (Appendix E).

1. Data Quality Assessment for Bass Analyses

Seven data packages containing bass samples were reviewed and inspected for analytical precision and accuracy.

1.1 Bass Fillet PCB Data Quality Summary

Bass fillet data from the 1997 sampling event showed no pervasive bias as demonstrated by surrogate, LCS and MS recoveries. Surrogate recoveries of the samples, MS/MSDs, LCSs and method blanks were consistent, indicative of minimal matrix effect on data accuracy. All LCS and matrix spike recoveries were within control limits. With two exceptions, all surrogate recoveries were also within control limits.

- MS/MSD recoveries for Aroclor 1242 ranged from 109 to 123 percent with an average of 116 percent while recoveries for Aroclor 1254 ranged from 107 to 120 percent with an average of 114 percent. RPD values ranged from 11 to 12 with an average of 12 percent.
- LCS recoveries were within acceptable limits with recoveries for Aroclor 1242 ranging from 97 to 172 percent with an average of 120 percent and recoveries for Aroclor 1254 ranging from 91 to 142 percent with an average of 115 percent.
- Surrogate recoveries were within control limits for all but two samples. Tetrachloro-meta-xylene (TCX) recoveries ranged from 57 to 152 percent with an average of 84 percent and decachlorobiphenyl recoveries ranged from 55 to 150 percent with an average of 87 percent. Recoveries for both surrogates were slightly below control limits in sample K40617, indicating a potential low bias to the

sample data. Recoveries for both surrogates were above control limits in sample K40544. All positive data for this sample should be considered potentially biased high based on the recoveries.

- No Aroclors were detected in the method blanks.
- All initial calibration and continuing calibration standards were within method-specified limits.

1.2 Bass Whole Body PCB Data Quality Summary

Bass whole body data from the 1997 sampling event show no pervasive bias as demonstrated by surrogate and LCS recoveries. Surrogate recoveries of the samples, LCSs and method blanks were consistent, indicative of minimal matrix effect on data accuracy. All LCS recoveries were within control limits. With four exceptions, all surrogate recoveries were also within control limits.

- No whole body MS/MSD was analyzed with the samples.
- All LCS recoveries were within acceptable limits, with recoveries for Aroclor 1242 ranging from 97 to 145 percent with an average of 116 percent and recoveries for Aroclor 1254 ranging from 91 to 143 percent with an average of 112 percent.
- Surrogate recoveries were within control limits for all but four samples. Tetrachloro-meta-xylene (TCX) recoveries ranged from 19 to 127 percent with an average of 73 percent and decachlorobiphenyl recoveries ranged from 25 to 133 percent with an average of 88 percent. Recoveries for both surrogates were below control limits in sample K40612, indicating a low bias to the sample data. Recovery for one surrogate was below control limits in samples K40565, K40566 and K40567. Since recoveries for the remaining surrogate were within control limits, the deviations should have little or no impact on the sample data.
- No Aroclors were detected in the method blanks.
- All initial calibration and continuing calibration standards were within method-specified limits.

2. Data Quality Assessment for Carp PCB Analyses

Six carp data packages from the 1997 sampling event were reviewed and inspected for analytical precision and accuracy.

2.1 Carp PCB Data Quality Summary

Carp data from the 1997 sampling event showed no pervasive bias as demonstrated by surrogate, MS and LCS recoveries. Surrogate recoveries of the samples, MS, LCSs and method blanks were consistent, indicative of minimal matrix effect on data accuracy. All LCS and matrix spike recoveries were within control limits. With eight exceptions, all surrogate recoveries were also within control limits.

- MS/MSD recoveries for Aroclor 1242 ranged from 108 to 182 percent with an average of 145 percent while recoveries for Aroclor 1254 ranged from 114 to 192 percent with an average of 153 percent. T⁺RPD values were 51 percent.

-
- LCS recoveries were within acceptable limits with recoveries for Aroclor 1242 ranging from 97 to 172 percent with an average of 123 percent and recoveries for Aroclor 1254 ranging from 91 to 143 percent with an average of 118 percent.
 - Surrogate recoveries were within control limits for all but eight samples. Tetrachloro-meta-xylene (TCX) recoveries ranged from 37 to 135 percent with a mean value of 76 percent and decachlorobiphenyl recoveries ranged from 70 to 144 percent with a mean value of 95 percent. Recoveries for one surrogate was below control limits in samples K40506, K40512, K50415, K40587, K40640, K40641, K40643 and K40645. Since recoveries for the remaining surrogate were within control limits, the deviations should have little or no impact on the sample data.
 - No Aroclors were detected in the method blanks.
 - All initial calibration and continuing calibration standards were within method-specified limits.

Appendix E

Data Quality Review Reports

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

**DATA REVIEW FOR
ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER
SUPERFUND SITE**

SDG# FISH01

PCB ANALYSES

BIOTA

Analyses performed by:

**ITS Environmental, Inc.
Colchester, Vermont**

Review performed by:



**Blasland, Bouck & Lee, Inc.
Syracuse, New York**

Summary

The following is an assessment of the PCB data package for SDG# FISH01 for the analysis of tissue from the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and sample results for PCB and Lipid analyses. Analyses were performed on the following samples:

| Sample ID | Lab ID | Matrix | Sampling Date | Analyses | | | | |
|-----------|--------|--------|---------------|----------|-----|-----|-----|--------|
| | | | | VOA | BNA | PCB | TAL | %LIPID |
| K40500 | 345205 | tissue | 10/14/97 | | | x | | x |
| K40502 | 345207 | tissue | 10/14/97 | | | x | | x |
| K40503C | 345208 | tissue | 10/14/97 | | | x | | x |
| K40506 | 345209 | tissue | 10/14/97 | | | x | | x |
| K40507 | 345210 | tissue | 10/14/97 | | | x | | x |
| K40508K | 345211 | tissue | 10/14/97 | | | x | | x |
| K40509 | 345212 | tissue | 10/14/97 | | | x | | x |
| K40511 | 345214 | tissue | 10/14/97 | | | x | | x |
| K40512 | 345215 | tissue | 10/14/97 | | | x | | x |
| K40513 | 345216 | tissue | 10/14/97 | | | x | | x |
| K40514 | 345217 | tissue | 10/14/97 | | | x | | x |
| K40515 | 345218 | tissue | 10/14/97 | | | x | | x |
| K40516 | 345219 | tissue | 10/14/97 | | | x | | x |
| K40504-C1 | 345418 | tissue | 10/14/97 | | | x | | x |
| K40504-C2 | 345419 | tissue | 10/16/97 | | | x | | x |
| K40504-C | 345420 | tissue | 10/14/97 | | | x | | x |
| K40517-C | 345421 | tissue | 10/15/97 | | | x | | x |
| K40518-C | 345422 | tissue | 10/15/97 | | | x | | x |
| K40519-C | 345423 | tissue | 10/15/97 | | | x | | x |
| K40520-C | 345424 | tissue | 10/15/97 | | | x | | x |
| | | | | | | | | |

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by ITS Environmental, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which is less likely to be affected by interferences. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

Since the samples were held in frozen storage, no holding time from date of collection applies; however, a holding time of 40 days from extraction to analysis has been applied to all samples.

All samples were analyzed beyond the specified holding time. Based on the deviation, all data has been qualified as estimated.

2. Blank Contamination

Quality assurance blanks, i.e., method, field or rinse blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure contamination of samples during field operations.

No target compounds were detected in the method blanks. Field blanks are not applicable to biota sampling.

3. System Performance

The system performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The initial calibration was within this limit for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limit for all Aroclors.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recovery for one surrogate was below control limits in samples K40506, K40512 and K40515. Since recoveries for the remaining surrogate were within control limits, no data has been qualified based on the deviations. Recovery for both surrogates were above control limits in the extraction blank. Since surrogate recoveries for all samples associated with the blank were acceptable, no action has been taken based on the deviation. Surrogates were diluted beyond the range of detection in sample K40509. No data has been qualified based on diluted surrogates.

All other surrogate recoveries were within control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

All Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

No matrix spike/matrix spike duplicate was included in this data set. No evaluation of matrix-specific performance could therefore be performed.

A matrix spike blank was extracted and analyzed with the samples. Since the matrix spike blank demonstrated acceptable recoveries, no action has been taken based on the lack of a matrix spike.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

DATA REVIEW CHECKLIST

PCB Data Review Checklist

| | YES | NO | NA |
|--|---------------|---------------|---------------|
| <u>Data Completeness and Deliverables</u> | | | |
| Is there a narrative or cover letter present? | <u>X</u> | <u> </u> | <u> </u> |
| Are the sample numbers included in the narrative? | <u>X</u> | <u> </u> | <u> </u> |
| Are the sample chain-of-custodies present? | <u>X</u> | <u> </u> | <u> </u> |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | <u> </u> | <u>X</u> | <u> </u> |
| <u>Holding Times</u> | | | |
| Have any holding times been exceeded? | <u>X</u> | <u> </u> | <u> </u> |
| <u>Surrogate Recovery</u> | | | |
| Are surrogate recovery forms present? | <u>X</u> | <u> </u> | <u> </u> |
| Are all the samples listed on the appropriate surrogate recovery form? | <u>X</u> | <u> </u> | <u> </u> |
| Were recoveries of TCX or DCB outside of specified limits for any sample or blank? | <u>X</u> | <u> </u> | <u> </u> |
| If yes, were the samples reanalyzed? | <u> </u> | <u>X</u> | <u> </u> |
| <u>Matrix Spikes</u> | | | |
| Is there a matrix spike recovery form present? | <u> </u> | <u>X</u> | <u> </u> |
| Were matrix spikes analyzed at the required frequency? | <u> </u> | <u>X</u> | <u> </u> |
| How many spike recoveries were outside of QC limits? | | | |
| <u>NA</u> out of <u>NA</u> | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| <u>NA</u> out of <u>NA</u> | | | |
| <u>Blanks</u> | | | |
| Is a Method Blank Summary Form present? | <u>X</u> | <u> </u> | <u> </u> |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | <u>X</u> | <u> </u> | <u> </u> |
| Do any method/reagent/instrument blanks have positive results? | <u> </u> | <u>X</u> | <u> </u> |
| Do any field/rinse blanks have positive results? | <u> </u> | <u> </u> | <u>X</u> |
| Are there field/rinse/equipment blanks associated with every sample? | <u> </u> | <u> </u> | <u>X</u> |

PCB Data Review Checklist - Page 2

| | YES | NO | NA |
|---|----------|----------|----------|
| <u>Calibration and GC Performance</u> | | | |
| Are the following chromatograms and data printouts present? | | | |
| Aroclor 1016/1260 | <u>X</u> | | |
| Aroclor 1221 | <u>X</u> | | |
| Aroclor 1232 | <u>X</u> | | |
| Aroclor 1242 | <u>X</u> | | |
| Aroclor 1248 | <u>X</u> | | |
| Aroclor 1254 | <u>X</u> | | |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence? | <u>X</u> | | |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | <u>X</u> | | |
| Have all samples been injected within a 12 hour period beginning with the injection of a calibration standard? | <u>X</u> | | |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed? | <u>X</u> | | |
| Are %D values for all compounds within limits (less than 15%)? | <u>X</u> | | |
| <u>Analytical Sequence Check</u> | | | |
| Is a analytical sequence form present and complete for each column and each period of analyses? | <u>X</u> | | |
| Was the proper analytical sequence followed? | <u>X</u> | | |
| <u>Cleanup Efficiency Verification</u> | | | |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | | | <u>X</u> |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | <u>X</u> | | |
| <u>PCB Identification</u> | | | |
| Is both a combined and single column Aroclor Identification Report present for every sample? | <u>X</u> | | |
| Do the combined column and individual column Aroclor identifications agree? | <u>X</u> | | |
| Were there any false negatives? | | <u>X</u> | |

PCB Data Review Checklist - Page 3

| | YES | NO | NA |
|--|--------------|--------------|--------------|
| Was GC/MS confirmation provided when required? | _____ | _____ | <u> X </u> |
| <u>Compound Quantitation and Reported Detection Limits</u> | | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | <u> X </u> | _____ | _____ |
| <u>Chromatogram Quality</u> | | | |
| Were the baselines stable? | <u> X </u> | _____ | _____ |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | _____ | <u> X </u> | _____ |
| <u>Field Duplicates</u> | | | |
| Were field duplicates submitted with the samples? | _____ | _____ | <u> X </u> |

**PCB Holding Time and Surrogate
Recovery Summary**

| Sample ID | Holding Time | Surrogates | |
|-----------|--------------|------------|-----|
| | | TCX | DCB |
| K40500 | +5 | | |
| K40502 | +5 | | |
| K40503C | +5 | | |
| K40506 | +5 | I | |
| K40507 | +5 | | |
| K40508K | +5 | | |
| K40509 | +5 | D | D |
| K40511 | +5 | | |
| K40512 | +5 | I | |
| K40513 | +5 | | |
| K40514 | +5 | | |
| K40515 | +5 | I | |
| K40516 | +5 | | |
| K40504-C1 | +5 | | |
| K40504-C2 | +5 | | |
| K40504-C | +5 | | |
| K40517-C | +10 | | |
| K40518-C | +10 | | |
| K40519-C | +10 | | |
| K40520-C | +10 | | |
| | | | |
| | | | |
| | | | |
| | | | |

Surrogate Standards
 TCX Tetrachloro-m-xylene
 DCB Decachlorobiphenyl

Qualifiers:
 D Surrogates diluted out
 I Recovery high
 I Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: HP3327
Column: RTX-35 / RTX-5

[illegible]

**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40500

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH01

Phase Type: BIOTA

Lab Sample ID: 345205

Phase Weight: 10.0 (g)

Date Received: 10/16/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 2.0

Date Analyzed: 01/31/98

% Solids: 200 *pk* 410/108

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-------------------|
| 12674-11-2 | Aroclor-1016 | 100 | <i>H</i> <i>5</i> |
| 11104-28-2 | Aroclor-1221 | 100 | <i>H</i> <i>5</i> |
| 11141-16-5 | Aroclor-1232 | 100 | <i>H</i> <i>5</i> |
| 53469-21-9 | Aroclor-1242 | 100 | <i>H</i> <i>5</i> |
| 12672-29-6 | Aroclor-1248 | 330 | <i>H</i> |
| 11097-69-1 | Aroclor-1254 | 450 | <i>H</i> |
| 11096-82-5 | Aroclor-1260 | 94 | <i>J</i> |

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**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40502

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH01

Phase Type: BIOTA

Lab Sample ID: 345207

Phase Weight: 10.0 (g)

Date Received: 10/16/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 01/31/98

% Solids: 100
100
100

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | ✓ 5 |
| 11104-28-2 | Aroclor-1221 | 50 | ✓ 5 |
| 11141-16-5 | Aroclor-1232 | 50 | ✓ 5 |
| 53469-21-9 | Aroclor-1242 | 50 | ✓ 5 |
| 12672-29-6 | Aroclor-1248 | 290 | ✓ 5 |
| 11097-69-1 | Aroclor-1254 | 330 | ✓ 5 |
| 11096-82-5 | Aroclor-1260 | 59 | ✓ 5 |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40503C

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH01

Phase Type: BIOTA

Lab Sample ID: 345208

Phase Weight: 10.0 (g)

Date Received: 10/16/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 2.0

Date Analyzed: 01/31/98

% Solids: 100% ~~100%~~

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 100 | ✓ 5 |
| 11104-28-2 | Aroclor-1221 | 100 | ✓ 5 |
| 11141-16-5 | Aroclor-1232 | 100 | ✓ 5 |
| 53469-21-9 | Aroclor-1242 | 100 | ✓ 5 |
| 12672-29-6 | Aroclor-1248 | 100 | ✓ 5 |
| 11097-69-1 | Aroclor-1254 | 1000 | ✓ 5 |
| 11096-82-5 | Aroclor-1260 | 97 | J |

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ITS Environmental 55 South Park Drive Colchester, Vermont 05446

Telephone (802) 655-1203

By KPC

000033

**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40508

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH01

Phase Type: BIOTA

Lab Sample ID: 345211

Phase Weight: 10.0 (g)

Date Received: 10/16/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 10.0

Date Analyzed: 01/31/98

% Solids: 100% *W*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 500 | <i>4</i> |
| 11104-28-2 | Aroclor-1221 | 500 | <i>4</i> |
| 11141-16-5 | Aroclor-1232 | 500 | <i>4</i> |
| 53469-21-9 | Aroclor-1242 | 500 | <i>4</i> |
| 12672-29-6 | Aroclor-1248 | 500 | <i>4</i> |
| 11097-69-1 | Aroclor-1254 | 4900 | <i>4</i> |
| 11096-82-5 | Aroclor-1260 | 1000 | <i>4</i> |

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**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40509

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH01

Phase Type: BIOTA

Lab Sample ID: 345212

Phase Weight: 10.0 (g)

Date Received: 10/16/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 20.0

Date Analyzed: 01/31/98

% Solids: 100 ~~100~~ ~~100~~

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 1000 | # 5 |
| 11104-28-2 | Aroclor-1221 | 1000 | # 5 |
| 11141-16-5 | Aroclor-1232 | 1000 | # 5 |
| 53469-21-9 | Aroclor-1242 | 3000 | # 5 |
| 12672-29-6 | Aroclor-1248 | 1000 | # 5 |
| 11097-69-1 | Aroclor-1254 | 13000 | # 5 |
| 11096-82-5 | Aroclor-1260 | 1300 | # 5 |

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**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40511

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH01

Phase Type: BIOTA

Lab Sample ID: 345214

Phase Weight: 10.0 (g)

Date Received: 10/16/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 5.0

Date Analyzed: 01/31/98

% Solids: 100%
20%
20%

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 250 | 5 |
| 11104-28-2 | Aroclor-1221 | 250 | 5 |
| 11141-16-5 | Aroclor-1232 | 250 | 5 |
| 53469-21-9 | Aroclor-1242 | 250 | 5 |
| 12672-29-6 | Aroclor-1248 | 1100 | 5 |
| 11097-69-1 | Aroclor-1254 | 1500 | 5 |
| 11096-82-5 | Aroclor-1260 | 340 | 5 |

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FORM 1
AROCLOL ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40512

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH01

Phase Type: BIOTA

Lab Sample ID: 345215

Phase Weight: 10.0 (g)

Date Received: 10/16/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 10.0

Date Analyzed: 01/31/98

% Solids: *100% ab*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-------------------|
| 12674-11-2 | Aroclor-1016 | 500 | <i>4</i> <i>5</i> |
| 11104-28-2 | Aroclor-1221 | 500 | <i>4</i> <i>5</i> |
| 11141-16-5 | Aroclor-1232 | 500 | <i>4</i> <i>5</i> |
| 53469-21-9 | Aroclor-1242 | 500 | <i>4</i> <i>5</i> |
| 12672-29-6 | Aroclor-1248 | 500 | <i>4</i> <i>5</i> |
| 11097-69-1 | Aroclor-1254 | 5200 | <i>4</i> <i>5</i> |
| 11096-82-5 | Aroclor-1260 | 810 | <i>4</i> <i>5</i> |

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By *KAC*

**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40513

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH01

Phase Type: BIOTA

Lab Sample ID: 345216

Phase Weight: 10.0 (g)

Date Received: 10/16/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 01/31/98

% Solids: 100 *W*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | R 55 |
| 11104-28-2 | Aroclor-1221 | 50 | R 55 |
| 11141-16-5 | Aroclor-1232 | 50 | R 55 |
| 53469-21-9 | Aroclor-1242 | 50 | R 55 |
| 12672-29-6 | Aroclor-1248 | 330 | |
| 11097-69-1 | Aroclor-1254 | 310 | 10 |
| 11096-82-5 | Aroclor-1260 | 80 | 10 |

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E, *KPC*

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40514

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH01

Phase Type: BIOTA

Lab Sample ID: 345217

Phase Weight: 10.0 (g)

Date Received: 10/16/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 01/31/98

% Solids: 100% ~~100%~~

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | ✓ 5 |
| 11104-28-2 | Aroclor-1221 | 50 | ✓ 5 |
| 11141-16-5 | Aroclor-1232 | 50 | ✓ 5 |
| 53469-21-9 | Aroclor-1242 | 50 | ✓ 5 |
| 12672-29-6 | Aroclor-1248 | 530 | ✓ 5 |
| 11097-69-1 | Aroclor-1254 | 370 | ✓ 5 |
| 11096-82-5 | Aroclor-1260 | 71 | ✓ 5 |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40515

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH01

Phase Type: BIOTA

Lab Sample ID: 345218

Phase Weight: 10.0 (g)

Date Received: 10/16/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 10.0

Date Analyzed: 01/31/98

% Solids: 100% *KPC*
10/19/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-------------------|
| 12674-11-2 | Aroclor-1016 | 500 | <i>W</i> <i>5</i> |
| 11104-28-2 | Aroclor-1221 | 500 | <i>F</i> <i>5</i> |
| 11141-16-5 | Aroclor-1232 | 500 | <i>F</i> <i>5</i> |
| 53469-21-9 | Aroclor-1242 | 500 | <i>F</i> <i>5</i> |
| 12672-29-6 | Aroclor-1248 | 1500 | <i>4</i> <i>5</i> |
| 11097-69-1 | Aroclor-1254 | 2100 | <i>4</i> <i>5</i> |
| 11096-82-5 | Aroclor-1260 | 560 | <i>4</i> <i>5</i> |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40516

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH01

Phase Type: BIOTA

Lab Sample ID: 345219

Phase Weight: 10.0 (g)

Date Received: 10/16/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 5.0

Date Analyzed: 01/31/98

% Solids: 100% ~~100%~~

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 250 | ✓ B |
| 11104-28-2 | Aroclor-1221 | 250 | ✓ B |
| 11141-16-5 | Aroclor-1232 | 250 | ✓ B |
| 53469-21-9 | Aroclor-1242 | 250 | ✓ B |
| 12672-29-6 | Aroclor-1248 | 250 | ✓ B |
| 11097-69-1 | Aroclor-1254 | 2000 | ✓ B |
| 11096-82-5 | Aroclor-1260 | 350 | ✓ B |

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ITS Environmental 55 South Park Drive Colchester, Vermont 05446

Telephone (802) 655-1203

Fax (802) 655-1248

By KAC

000122

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40504-C

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH01

Phase Type: BIOTA

Lab Sample ID: 345420

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 3.0

Date Analyzed: 01/31/98

% Solids: 100% ~~100~~ ¹⁰⁰ ₁₀₀

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 150 | ✓ |
| 11104-28-2 | Aroclor-1221 | 150 | ✓ |
| 11141-16-5 | Aroclor-1232 | 150 | ✓ |
| 53469-21-9 | Aroclor-1242 | 150 | ✓ |
| 12672-29-6 | Aroclor-1248 | 590 | ✓ |
| 11097-69-1 | Aroclor-1254 | 700 | ✓ |
| 11096-82-5 | Aroclor-1260 | 150 | ✓ |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40517-C

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH01

Phase Type: BIOTA

Lab Sample ID: 345421

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/05/98

% Solids: 100 *100*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|--------------------|
| 12674-11-2 | Aroclor-1016 | 50 | <i>4</i> <i>55</i> |
| 11104-28-2 | Aroclor-1221 | 50 | <i>4</i> <i>55</i> |
| 11141-16-5 | Aroclor-1232 | 50 | <i>4</i> <i>55</i> |
| 53469-21-9 | Aroclor-1242 | 50 | <i>4</i> <i>55</i> |
| 12672-29-6 | Aroclor-1248 | 50 | <i>4</i> <i>55</i> |
| 11097-69-1 | Aroclor-1254 | 200 | <i>4</i> <i>55</i> |
| 11096-82-5 | Aroclor-1260 | 39 | J |

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**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40520-C

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH01

Phase Type: BIOTA

Lab Sample ID: 345424

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/05/98

% Solids: 100% *KPC* *Alto 1/98*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-------------------|
| 12674-11-2 | Aroclor-1016 | 50 | <i>H</i> <i>5</i> |
| 11104-28-2 | Aroclor-1221 | 50 | <i>H</i> <i>5</i> |
| 11141-16-5 | Aroclor-1232 | 50 | <i>H</i> <i>5</i> |
| 53469-21-9 | Aroclor-1242 | 50 | <i>H</i> <i>5</i> |
| 12672-29-6 | Aroclor-1248 | 50 | <i>H</i> <i>5</i> |
| 11097-69-1 | Aroclor-1254 | 210 | <i>H</i> <i>5</i> |
| 11096-82-5 | Aroclor-1260 | 36 | <i>J</i> |

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By *KPC*

PERCENT LIPID ANALYSES

Percent Lipids Results

[illegible]

CHAIN OF CUSTODY



MASLAND & BOUCK
ENGINEERS, P.C.

000004

CHAIN OF CUSTODY RECORD

| PROJ. NO. | | PROJECT NAME | | | | NO. OF CON- TAINERS | Whole Fish PLBs (Aroclor) % Lipids | | | | | | REMARKS |
|------------------------------|----------|--------------|----------------|------|---|------------------------------|---|---|--|-------------|--|--------------------------|---|
| SAMPLERS: (Signature) | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP | GRAB | STATION LOCATION | | | | | | | | |
| K 40500 | 10/11/57 | 1312 | | X | New Richmond - ABSA #11 | 1 | X | X | | | | | Fillet and analyze following analytical procedures discussed previously |
| K 40501 | | | | X | | | | | | | | | |
| K 40502 | | | | X | | | | | | | | | |
| K 40503 | | | X | | | | | | | | | | Analyze whole-body composite as directed above |
| K 40504 | | | X | | | | | | | | | | Retain for combination w/ additional samples |
| K 40512 | | | | X | | | | | | | | | Fillet and analyze following analytical procedures discussed previously |
| K 40513 | | | | | | | | | | | | | |
| K 40514 | | | | | | | | | | | | | |
| K 40515 | | | | | | | | | | | | | |
| K 40516 | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | | Date / Time | | Received by: (Signature) | | Relinquished by: (Signature) | | | Date / Time | | Received by: (Signature) | |
| K 40516 | | | 10/15/57 17:50 | | | | | | | | | | |
| Relinquished by: (Signature) | | | Date / Time | | Received by: (Signature) | | Relinquished by: (Signature) | | | Date / Time | | Received by: (Signature) | |
| | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | | Date / Time | | Received for Laboratory by: (Signature) | | Date / Time | | | Remarks | | | |
| | | | | | Sharon Miller | | 10/14/57 0930 | | | | | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

COPY - ORIGINAL ON FILE

SDG # FISH #01 ETR # 67452



BLASLAND & BOUCK
ENGINEERS, P.C.

000005

CHAIN OF CUSTODY RECORD

| PROJ. NO. | | PROJECT NAME | | | | NO. OF CON- TAINERS | Whole Fish PCBs (Aroclor) 3 Lipids | | | | | | | | REMARKS | | |
|------------------------------|----------|--------------|-------|------|-------------------------|------------------------------|--|---|--|--|--|--|--|---|---------|--------------------------|--|
| SAMPLERS: (Signature) | | | | | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | | | | | | | | | | | | |
| K 40500 | 10/11/97 | 1310 | | X | New Richmond - ABSA #11 | 1 | X | X | | | | | | Fillet and analyze following analytical procedures discussed previously | | | |
| K 40501 | | | | X | | | | | | | | | | | | | |
| K 40502 | | | | X | | | | | | | | | | | | | |
| K 40503 | | | X | | | | | | | | | | | Analyze whole-body composite as directed above | | | |
| K 40504 | | | X | | | | | | | | | | | Retain for combination w/ additional samples | | | |
| K 40512 | | | | X | | | | | | | | | | Fillet and analyze following analytical procedures discussed previously | | | |
| K 40513 | | | | | | | | | | | | | | | | | |
| K 40514 | | | | | | | | | | | | | | | | | |
| K 40515 | | | | | | | | | | | | | | | | | |
| K 40516 | | | | | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | | | | | Date / Time | | Received by: (Signature) | | | | | | Date / Time | | Received by: (Signature) | |
| Relinquished by: (Signature) | | | | | | Date / Time | | Received by: (Signature) | | | | | | Date / Time | | Received by: (Signature) | |
| Relinquished by: (Signature) | | | | | | Date / Time | | Received for Laboratory by: (Signature) | | | | | | Date / Time | | Remarks | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field File



BLASLAND & BOUCK
ENGINEERS, P.C.

000006

CHAIN OF CUSTODY RECORD

| PROJ. NO. | | PROJECT NAME | | | | NO. OF CON- TAINERS | Whole Fish PCBs (Aroclor) % Lipids | | | | | | REMARKS | | | |
|---|----------|--------------|-------------------------------|------|--|------------------------------|--|-------------------------------|--|---------|-------------|--|--------------------------|--|---|--|
| SAMPLERS: (Signature) <i>Karl O. Thomas</i> | | | | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | DOWN | GRAB | STATION LOCATION | | | | | | | | | | | |
| K 40506 | 10/14/97 | 12:00 | | X | New Richmond AGSA #11 | 1 | X | X | | | | | | | Fillet and analyze skin off filets following analytical procedures discussed previously | |
| K 40507 | | | | | | | | | | | | | | | | |
| K 40508 | | | | | | | | | | | | | | | | |
| K 40509 | | | | | | | | | | | | | | | | |
| K 40510 | | | | | | | | | | | | | | | | |
| K 40511 | | | | | | | | | | | | | | | | |
| Relinquished by: (Signature) <i>Karl O. Thomas</i> | | | Date / Time 10/15/97 16:40 | | Received by: (Signature) | | | Relinquished by: (Signature) | | | Date / Time | | Received by: (Signature) | | | |
| Relinquished by: (Signature) | | | Date / Time | | Received by: (Signature) | | | Relinquished by: (Signature) | | | Date / Time | | Received by: (Signature) | | | |
| Relinquished by: (Signature) | | | Date / Time | | Received for Laboratory by: (Signature) <i>Michael Thomas</i> | | | Date / Time 10/16/97 09:30 | | Remarks | | | | | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

CHAIN OF CUSTODY RECORD

000007

| PROJ. NO. | | PROJECT NAME | | Whole Fish | | Number of Containers | | P.B.C. (Anchors) | | 2 Lipids | | REMARKS | |
|------------------------------|-------------------------------|--------------|-------|---|---------------------------------------|------------------------------|------|------------------|------|------------------------------|--|---|--|
| SAMPLERS: (Signature) | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | | | | | | | | |
| 64524711 | Kalamazoo River Resident Fish | | | | | | | | | | | | |
| 40504-C2 | 10/16/97 | 14:00 | X | | New Richmond AUSA#11 Juvenile SM Bass | | 1 | X | X | | | Combine K40504-C2 with K40504-C1 (provided earlier) | |
| 40530-C | | | | | | | | | | | | Process all Juvenile bass composite samples as whole-body composites and analyze following analytical procedures discussed previously. | |
| 40531-C | | | | | | | | | | | | | |
| 40532-C | | | | | | | | | | | | | |
| 40533-C | 10/17/97 | 10:00 | X | | Lake Allegan AUSA#9 Juvenile SM Bass | | | | | | | * 40534 Retain C-1 to combine with 40534 C-2 which will follow at later date | |
| 40534-C1 | " | " | " | | " | | | | | | | | |
| 40535 | 10/17/97 | 10:00 | | X | Lake Allegan AUSA#9 Adult Carp | | 1 | X | X | | | Fillet carp (skin-off fillets) and bass (skin-on, scales-on fillets) and analyze fillets following analytical procedures discussed previously | |
| K40536 | | | | | | | | | | | | | |
| K40537 | | | | | | | | | | | | | |
| K40538 | | | | | | | | | | | | | |
| K40539 | | | | | | | | | | | | | |
| K40540 | | | | | Lake Allegan AUSA#9 Adult Bass | | | | | | | | |
| K40541 | | | | | | | | | | | | | |
| K40542 | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | DATE | TIME | Received by: (Signature) | | Relinquished by: (Signature) | | DATE | TIME | Relinquished by: (Signature) | | | |
| K40542 | | 10/17/97 | 16:30 | | | | | | | | | | |
| Relinquished by: (Signature) | | DATE | TIME | Received by: (Signature) | | Relinquished by: (Signature) | | DATE | TIME | Relinquished by: (Signature) | | | |
| | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | DATE | TIME | Received for Laboratory by: (Signature) | | DATE | TIME | Remarks: | | | | | |
| | | | | Mason Nier | | 10/17/97 | 1645 | | | | | | |



BLASLAND & BOUCK
ENGINEERS, P.C.

800000

CHAIN OF CUSTODY RECORD

| PROJ. NO. | | PROJECT NAME | | | | NO. OF CONTAINERS | Whole Fish | PLAs (Anchors) | % Lipids | | | | | | | REMARKS | |
|------------------------------|-------|-------------------------------|-------------|------|--|---|------------|----------------|------------------------------|--|--|-------------|--|--|--------------------------|--|--|
| GAS 24 711 | | Kalamazoo River Resident Fish | | | | | | | | | | | | | | | |
| SAMPLERS: (Signature) | | | | | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP. | CRAB | STATION LOCATION | | | | | | | | | | | | |
| K10517-C | 10/15 | | X | | Juvenile Sm Bass MORROW Pond - ABSSA # 2 | 1 | X | X | | | | | | | | Analyze whole body comp. its samples. Fillet and analyze following analytical procedures discussed previously. | |
| K10518-C | 10/15 | | X | | | | | | | | | | | | | | |
| K10519-C | 10/15 | | X | | | | | | | | | | | | | | |
| K10520-C | 10/15 | | X | | | | | | | | | | | | | | |
| K10521 | | | | X | Morrow Pond Adult Carp ABSSA #2 | | | | | | | | | | | Fillet and analyze following analytical procedures discussed previously. | |
| K10522 | | | | | | | | | | | | | | | | | |
| K10523 | | | | | | | | | | | | | | | | | |
| K10524 | | | | | | | | | | | | | | | | | |
| K10525 | | | | | | | | | | | | | | | | | |
| K10526 | | | | | | | | | | | | | | | | | |
| K10527 | | | | | Morrow Pond ABSSA #2 Adult Sm Bass | | | | | | | | | | | | |
| K10528 | | | | | | | | | | | | | | | | | |
| K10529 | | | | | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | | Date / Time | | | Received by: (Signature) | | | Relinquished by: (Signature) | | | Date / Time | | | Received by: (Signature) | | |
| 10/17/97 | | | 16:50 | | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | | Date / Time | | | Received by: (Signature) | | | Relinquished by: (Signature) | | | Date / Time | | | Received by: (Signature) | | |
| | | | | | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | | Date / Time | | | Received for Laboratory by: (Signature) | | | Date / Time | | | Remarks | | | | | |
| | | | | | | Sharon New | | | 10/18/97 1045 | | | | | | | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

**DATA REVIEW FOR
ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER
SUPERFUND SITE**

SDG# FISH02

PCB ANALYSES

BIOTA

Analyses performed by:

**ITS Environmental, Inc.
Colchester, Vermont**

Review performed by:



**Blasland, Bouck & Lee, Inc.
Syracuse, New York**

Summary

The following is an assessment of the PCB data package for SDG# FISH02 for the analysis of tissue from the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and sample results for PCB and Lipid analyses. Analyses were performed on the following samples:

| Sample ID | Lab ID | Matrix | Sampling Date | Analyses | | | | |
|-----------|--------|--------|---------------|----------|-----|-----|-----|--------|
| | | | | VOA | BNA | PCB | TAL | %LIPID |
| K40521 | 345425 | tissue | 10/15/97 | | | x | | x |
| K40522 | 345426 | tissue | 10/15/97 | | | x | | x |
| K40523* | 345427 | tissue | 10/15/97 | | | x | | x |
| K40525 | 345429 | tissue | 10/15/97 | | | x | | x |
| K40526 | 345430 | tissue | 10/15/97 | | | x | | x |
| K40527 | 345431 | tissue | 10/15/97 | | | x | | x |
| K40528 | 345432 | tissue | 10/15/97 | | | x | | x |
| K40529 | 345433 | tissue | 10/15/97 | | | x | | x |
| K40530-C | 345434 | tissue | 10/15/97 | | | x | | x |
| K40531-C | 345435 | tissue | 10/16/97 | | | x | | x |
| K40532-C | 345436 | tissue | 10/16/97 | | | x | | x |
| K40533-C | 345437 | tissue | 10/16/97 | | | x | | x |
| K40535 | 345438 | tissue | 10/17/97 | | | x | | x |
| K40536 | 345439 | tissue | 10/17/97 | | | x | | x |
| K40537 | 345440 | tissue | 10/17/97 | | | x | | x |
| K40538 | 345441 | tissue | 10/17/97 | | | x | | x |
| K40539 | 345442 | tissue | 10/17/97 | | | x | | x |
| K40540 | 345443 | tissue | 10/17/97 | | | x | | x |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

* MS/MSD performed on sample

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by ITS Environmental, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which is less likely to be affected by interferences. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

Since the samples were held in frozen storage, no holding time from date of collection applies; however, a holding time of 40 days from extraction to analysis has been applied to all samples.

All samples except K40523, K40523MS and K402523MSD were analyzed beyond the specified holding time. Based on the deviation, data for all samples except K40523, K40523MS and K40523MSD have been qualified as estimated.

2. Blank Contamination

Quality assurance blanks, i.e., method, field or rinse blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure contamination of samples during field operations.

No target compounds were detected in the method blanks. Field blanks are not applicable to biota sampling.

3. System Performance

The system performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The initial calibration was within this limit for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limit for all Aroclors.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recovery for both surrogates were above control limits in the extraction blank. Since recoveries for all samples associated with the blank were acceptable, no action has been taken based on the deviation.

All other surrogate recoveries were within control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

All Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

All matrix spike and matrix spike duplicate recoveries and relative percent differences between recoveries were within control limits. All matrix spike blank recoveries were also within control limits.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

DATA REVIEW CHECKLIST

PCB Data Review Checklist

| | YES | NO | NA |
|--|---------------|---------------|---------------|
| <u>Data Completeness and Deliverables</u> | | | |
| Is there a narrative or cover letter present? | <u>X</u> | <u> </u> | <u> </u> |
| Are the sample numbers included in the narrative? | <u>X</u> | <u> </u> | <u> </u> |
| Are the sample chain-of-custodies present? | <u>X</u> | <u> </u> | <u> </u> |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | <u> </u> | <u>X</u> | <u> </u> |
| <u>Holding Times</u> | | | |
| Have any holding times been exceeded? | <u>X</u> | <u> </u> | <u> </u> |
| <u>Surrogate Recovery</u> | | | |
| Are surrogate recovery forms present? | <u>X</u> | <u> </u> | <u> </u> |
| Are all the samples listed on the appropriate surrogate recovery form? | <u>X</u> | <u> </u> | <u> </u> |
| Were recoveries of TCX or DCB outside of specified limits for any sample or blank? | <u>X</u> | <u> </u> | <u> </u> |
| If yes, were the samples reanalyzed? | <u> </u> | <u>X</u> | <u> </u> |
| <u>Matrix Spikes</u> | | | |
| Is there a matrix spike recovery form present? | <u>X</u> | <u> </u> | <u> </u> |
| Were matrix spikes analyzed at the required frequency? | <u>X</u> | <u> </u> | <u> </u> |
| How many spike recoveries were outside of QC limits? | | | |
| <u> 0 </u> out of <u> 4 </u> | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| <u> 0 </u> out of <u> 2 </u> | | | |
| <u>Blanks</u> | | | |
| Is a Method Blank Summary Form present? | <u>X</u> | <u> </u> | <u> </u> |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | <u>X</u> | <u> </u> | <u> </u> |
| Do any method/reagent/instrument blanks have positive results? | <u> </u> | <u>X</u> | <u> </u> |
| Do any field/rinse blanks have positive results? | <u> </u> | <u> </u> | <u>X</u> |
| Are there field/rinse/equipment blanks associated with every sample? | <u> </u> | <u> </u> | <u>X</u> |

PCB Data Review Checklist - Page 2

| | YES | NO | NA |
|---|---------------|---------------|---------------|
| <u>Calibration and GC Performance</u> | | | |
| Are the following chromatograms and data printouts present? | | | |
| Aroclor 1016/1260 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1221 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1232 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1242 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1248 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1254 | <u>X</u> | | |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence? | <u>X</u> | <u> </u> | <u> </u> |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | <u>X</u> | <u> </u> | <u> </u> |
| Have all samples been injected within a 12 hour period beginning with the injection of a calibration standard? | <u>X</u> | <u> </u> | <u> </u> |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed? | <u>X</u> | <u> </u> | <u> </u> |
| Are %D values for all compounds within limits (less than 15%)? | <u>X</u> | <u> </u> | <u> </u> |
| <u>Analytical Sequence Check</u> | | | |
| Is a analytical sequence form present and complete for each column and each period of analyses? | <u>X</u> | <u> </u> | <u> </u> |
| Was the proper analytical sequence followed? | <u>X</u> | <u> </u> | <u> </u> |
| <u>Cleanup Efficiency Verification</u> | | | |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | <u> </u> | <u> </u> | <u>X</u> |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | <u>X</u> | <u> </u> | <u> </u> |
| <u>PCB Identification</u> | | | |
| Is both a combined and single column Aroclor Identification Report present for every sample? | <u>X</u> | <u> </u> | <u> </u> |
| Do the combined column and individual column Aroclor identifications agree? | <u>X</u> | <u> </u> | <u> </u> |
| Were there any false negatives? | <u> </u> | <u>X</u> | <u> </u> |

PCB Data Review Checklist - Page 3

| | YES | NO | NA |
|--|-------------------|-------------------|-------------------|
| Was GC/MS confirmation provided when required? | <u> </u> | <u> </u> | <u> X </u> |
| <u>Compound Quantitation and Reported Detection Limits</u> | | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | <u> X </u> | <u> </u> | <u> </u> |
| <u>Chromatogram Quality</u> | | | |
| Were the baselines stable? | <u> X </u> | <u> </u> | <u> </u> |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | <u> </u> | <u> X </u> | <u> </u> |
| <u>Field Duplicates</u> | | | |
| Were field duplicates submitted with the samples? | <u> </u> | <u> </u> | <u> X </u> |

**PCB Holding Time and Surrogate
Recovery Summary**

| Sample ID | Holding Time | Surrogates | |
|-----------|--------------|------------|-----|
| | | TCX | DCB |
| K40521 | +28 | | |
| K40522 | +28 | | |
| K40523 | | | |
| K40523MS | | | |
| K40523MSD | | | |
| K40525 | +28 | | |
| K40526 | +28 | | |
| K40527 | +28 | | |
| K40528 | +28 | | |
| K40529 | +28 | | |
| K40530-C | +28 | | |
| K40531-C | +28 | | |
| K40532-C | +28 | | |
| K40533-C | +28 | | |
| K40535 | +25 | | |
| K40536 | +25 | | |
| K40537 | +25 | | |
| K40538 | +25 | | |
| K40539 | +25 | | |
| K40540 | +25 | | |
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Surrogate Standards
 TCX Tetrachloro-m-xylene
 DCB Decachlorobiphenyl

Qualifiers:
 D Surrogates diluted out
 ! Recovery high
 ! Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: HP3327
Column: RTX-35 / RTX-5

[illegible]

PCB Calibration Summary - Page 2

Instrument: HP3327
Column: RTX-35 / RTX-5

[illegible]

PCB Calibration Summary - Page 3

Instrument: HP3327
 Column: RTX-35 / RTX-5

| Date: | 2/18/98- 2/19/98 | 2/20/98 | 2/23/98 | 2/23 | 2/23 | 2/23 | 2/23 | 2/23 |
|----------------------|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | | 2317 | 1202 | 1229 | 1745 | 1812 | 2329 | 2355 |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | %D | %D | %D | %D | %D | %D | %D |
| Aroclor 1016 | ok | | | | | | | |
| Aroclor 1221 | ok | | | | | | | |
| Aroclor 1232 | ok | | | | | | | |
| Aroclor 1242 | ok | ok | | | | | | ok |
| Aroclor 1248 | ok | | ok | | ok | | ok | |
| Aroclor 1254 | ok | | | ok | | | | |
| Aroclor 1260 | ok | | | | | ok | | |
| Tetrachloro-m-xylene | ok | | | | | | | |
| Decachlorobiphenyl | ok | | | | | | | |
| Affected Samples: | | | | | | | | |
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CORRECTED ANALYSIS SUMMARY FORMS

**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40521

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH02

Phase Type: BIOTA

Lab Sample ID: 346425

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/23/98

% Solids: 100% AT 100°C

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | B W |
| 11104-28-2 | Aroclor-1221 | 50 | B W |
| 11141-16-5 | Aroclor-1232 | 50 | B W |
| 53469-21-9 | Aroclor-1242 | 50 | B W |
| 12672-29-6 | Aroclor-1248 | 50 | B W |
| 11097-69-1 | Aroclor-1254 | 28 | J |
| 11096-82-5 | Aroclor-1260 | 33 | J |

REVISED
APR 07 1998

By Kfe

000012

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40522

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH02

Phase Type: BIOTA

Lab Sample ID: 345426

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/23/98

% Solids: 100% K₂CO₃ 714%

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U 5 |
| 11104-28-2 | Aroclor-1221 | 50 | U 5 |
| 11141-16-5 | Aroclor-1232 | 50 | U 5 |
| 53469-21-9 | Aroclor-1242 | 50 | U 5 |
| 12672-29-6 | Aroclor-1248 | 50 | U 5 |
| 11097-69-1 | Aroclor-1254 | 130 | U 5 |
| 11096-82-5 | Aroclor-1260 | 26 | J |

REVISE
APR 07 1998

By KPC

**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40523

Lab Name: ITS Environmental

Lab Code: iNCHVT

Contract: 91082

Case: PCB

SDG: FISH02

Phase Type: BIOTA

Lab Sample ID: 345427

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 01/16/98

Dilution Factor: 3.0

Date Analyzed: 02/19/98

% Solids: 100% 4/1/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 150 | U |
| 11104-28-2 | Aroclor-1221 | 150 | U |
| 11141-16-5 | Aroclor-1232 | 150 | U |
| 53469-21-9 | Aroclor-1242 | 150 | U |
| 12672-29-6 | Aroclor-1248 | 150 | U |
| 11097-69-1 | Aroclor-1254 | 150 | U |
| 11096-82-5 | Aroclor-1260 | 150 | U |

REVISE
APR 07 1998

By Kle

**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40525

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH02

Phase Type: BIOTA

Lab Sample ID: 345429

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/23/98

% Solids: 100% 4/11/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | R B |
| 11104-28-2 | Aroclor-1221 | 50 | R B |
| 11141-16-6 | Aroclor-1232 | 50 | R B |
| 53469-21-9 | Aroclor-1242 | 50 | R B |
| 12672-29-6 | Aroclor-1248 | 50 | R B |
| 11097-69-1 | Aroclor-1254 | 73 | H |
| 11096-82-5 | Aroclor-1260 | 30 | J |

REVISE
APR 07 1998
By llk

**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40526

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH02

Phase Type: BIOTA

Lab Sample ID: 345430

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/23/98

% Solids: 300 th 411A8

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | # 5 |
| 11104-28-2 | Aroclor-1221 | 50 | # 5 |
| 11141-16-5 | Aroclor-1232 | 50 | # 5 |
| 53469-21-9 | Aroclor-1242 | 50 | # 5 |
| 12672-29-6 | Aroclor-1248 | 50 | # 5 |
| 11097-69-1 | Aroclor-1254 | 150 | # 4 |
| 11096-82-5 | Aroclor-1260 | 38 | J |

REVISE
APR 07 1998

By KPC

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40527

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH02

Phase Type: BIOTA

Lab Sample ID: 345431

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/23/98

% Solids: 100% ~~100~~ 117148

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | R B |
| 11104-28-2 | Aroclor-1221 | 50 | R B |
| 11141-16-5 | Aroclor-1232 | 50 | R B |
| 53469-21-9 | Aroclor-1242 | 50 | R B |
| 12672-29-6 | Aroclor-1248 | 50 | R B |
| 11097-69-1 | Aroclor-1254 | 280 | R B |
| 11096-82-5 | Aroclor-1260 | 63 | R B |

REVIS
APR 07 1998

By Kec

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40528

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH02

Phase Type: BIOTA

Lab Sample ID: 345432

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/23/98

% Solids: 100% 41798

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | # 5 |
| 11104-28-2 | Aroclor-1221 | 50 | # 5 |
| 11141-16-5 | Aroclor-1232 | 50 | # 5 |
| 53469-21-9 | Aroclor-1242 | 50 | # 5 |
| 12672-29-6 | Aroclor-1248 | 50 | # 5 |
| 11097-69-1 | Aroclor-1254 | 120 | # 5 |
| 11096-82-5 | Aroclor-1260 | 35 | J |

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By Kec

ITS Environmental 55 South Park Drive Colchester, Vermont 05446

Telephone (802) 655-1203

Fax (802) 655-1248

000014

**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40529

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH02

Phase Type: BIOTA

Lab Sample ID: 345433

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/23/98

% Solids: 300 ^{µg} 4/1/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | 4 5 |
| 11104-28-2 | Aroclor-1221 | 50 | 4 5 |
| 11141-16-5 | Aroclor-1232 | 50 | 4 5 |
| 53469-21-9 | Aroclor-1242 | 50 | 4 5 |
| 12672-29-6 | Aroclor-1248 | 50 | 4 5 |
| 11097-69-1 | Aroclor-1254 | 110 | 4 5 |
| 11096-82-5 | Aroclor-1260 | 50 | 4 5 |

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By Kle
000075

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40530-C

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH02

Phase Type: BIOTA

Lab Sample ID: 345434

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 3.0

Date Analyzed: 02/23/98

% Solids: 100% 4/1/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 150 | ✓ B |
| 11104-28-2 | Aroclor-1221 | 150 | ✓ B |
| 11141-16-5 | Aroclor-1232 | 150 | ✓ B |
| 53469-21-9 | Aroclor-1242 | 150 | ✓ B |
| 12672-29-6 | Aroclor-1248 | 480 | ✓ B |
| 11097-69-1 | Aroclor-1254 | 640 | ✓ B |
| 11096-82-5 | Aroclor-1260 | 150 | ✓ B |

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By KLL

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40533-C

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH02

Phase Type: BIOTA

Lab Sample ID: 345437

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 5.0

Date Analyzed: 02/23/98

% Solids: 100% 4/11/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 250 | 4 5 |
| 11104-28-2 | Aroclor-1221 | 250 | 4 5 |
| 11141-16-5 | Aroclor-1232 | 250 | 4 5 |
| 53469-21-9 | Aroclor-1242 | 250 | 4 5 |
| 12672-29-6 | Aroclor-1248 | 1500 | 4 5 |
| 11097-69-1 | Aroclor-1254 | 900 | 4 5 |
| 11096-82-5 | Aroclor-1260 | 250 | 4 5 |

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**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40536

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH02

Phase Type: BIOTA

Lab Sample ID: 345438

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 5.0

Date Analyzed: 02/20/98

% Solids: 100% 4/14/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 250 | u 5 |
| 11104-28-2 | Aroclor-1221 | 250 | u 5 |
| 11141-16-5 | Aroclor-1232 | 250 | u 5 |
| 53469-21-9 | Aroclor-1242 | 250 | u 5 |
| 12672-29-6 | Aroclor-1248 | 600 | u 5 |
| 11097-69-1 | Aroclor-1254 | 700 | u 5 |
| 11096-82-5 | Aroclor-1260 | 190 | J |

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By Kle

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40536

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH02

Phase Type: BIOTA

Lab Sample ID: 345439

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/20/98

% Solids: 100% 4/1/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | u B |
| 11104-28-2 | Aroclor-1221 | 50 | u B |
| 11141-16-6 | Aroclor-1232 | 50 | u B |
| 53469-21-9 | Aroclor-1242 | 50 | u B |
| 12672-29-6 | Aroclor-1248 | 120 | u B |
| 11097-69-1 | Aroclor-1254 | 160 | u B |
| 11096-82-5 | Aroclor-1260 | 76 | u B |

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APR 07 1998

By Kle

**FORM 1
AROCLOL ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40537

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH02

Phase Type: BIOTA

Lab Sample ID: 345440

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 2.0

Date Analyzed: 02/20/98

% Solids: 100% 4/1/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 100 | B |
| 11104-28-2 | Aroclor-1221 | 100 | B |
| 11141-16-6 | Aroclor-1232 | 100 | B |
| 53469-21-9 | Aroclor-1242 | 100 | B |
| 12672-29-6 | Aroclor-1248 | 100 | B |
| 11097-69-1 | Aroclor-1254 | 350 | B |
| 11096-82-5 | Aroclor-1260 | 95 | J |

REVISED
APR 07 1998

By lfe

000138

CHAIN OF CUSTODY

6723 Towpath Road, P.O. Box 66
Syracuse, New York 13214-0066
TEL: (315) 446-9120

CHAIN OF CUSTODY RECORD

000004

| PROJ. NO. | | PROJECT NAME | | | | | <div style="display: flex; justify-content: space-between;"> <div>Whole Fish</div> <div>Number of Containers</div> <div>PLAs (Analog)</div> <div>2 Lipids</div> </div> | | | | | | | | | | REMARKS | | |
|-----------------------|----------|--------------|-------|------|--|---|--|---|--|--|--|--|--|--|--|--|---------|---|--|
| SAMPLERS: (Signature) | | | | | | | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | | | | | | | | | | | | | | |
| K 40504-C1 | 10/11/97 | 14:00 | X | | New Richmond ABSA #11 Juvenile Sm Bass | 1 | X | X | | | | | | | | | | Combine K40504-C1 with K40504-C2 (provided earlier) | |
| K 40530-C | | | | | | | | | | | | | | | | | | Process all Juvenile bass composite samples as whole-body composites and analyze following analytical procedures discussed previously. | |
| K 40531-C | | | | | | | | | | | | | | | | | | | |
| K 40532-C | | | | | | | | | | | | | | | | | | | |
| K 40533-C | 10/17/97 | 10:00 | X | | Lake Allegan ABSA #9 Juvenile Sm Bass | | | | | | | | | | | | | | |
| K 40534-C1 | " | " | " | | " | | | | | | | | | | | | | * 40534 Retain C-1 to combine with 40534 C-2 which will allow at n.l. data | |
| K 40535 | 10/17/97 | 10:00 | | X | Lake Allegan ABSA #9 Adult Comp | 1 | X | X | | | | | | | | | | Fillet comp. (skin-off fillets) and bass (skin-on, scales-on fillets) and analyze fillets following analytical procedures discussed previously. | |
| K 40536 | | | | | | | | | | | | | | | | | | | |
| K 40537 | | | | | | | | | | | | | | | | | | | |
| K 40538 | | | | | | | | | | | | | | | | | | | |
| K 40539 | | | | | | | | | | | | | | | | | | | |
| K 40540 | | | | | Lake Allegan ABSA #9 Adult Bass | | | | | | | | | | | | | | |
| K 40541 | | | | | | | | | | | | | | | | | | | |
| K 40542 | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|--|----------|-------|---|--|------------------------------|------|-------------------------|------|------------------------------|--|
| Relinquished by: (Signature) | | DATE | TIME | Received by: (Signature) | | Relinquished by: (Signature) | | DATE | TIME | Relinquished by: (Signature) | |
| <i>Kal D. [Signature]</i> | | 10/17/97 | 16:30 | | | | | | | | |
| Relinquished by: (Signature) | | DATE | TIME | Received by: (Signature) | | Relinquished by: (Signature) | | DATE | TIME | Relinquished by: (Signature) | |
| | | | | | | | | | | | |
| Relinquished by: (Signature) | | DATE | TIME | Received for Laboratory by: (Signature) | | DATE | TIME | Remarks: | | | |
| | | | | <i>Sharon Mier</i> | | 10/18/97 | 1045 | COPY - ORIGINAL ON FILE | | | |

23/95 Dis on: Copy to Coordinator Field File ETR PS

**DATA REVIEW FOR
ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER
SUPERFUND SITE**

SDG# FISH03

PCB ANALYSES

BIOTA

Analyses performed by:

**ITS Environmental, Inc.
Colchester, Vermont**

Review performed by:

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

**Blasland, Bouck & Lee, Inc.
Syracuse, New York**

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding Time | Surrogates | |
|-----------|--------------|------------|-----|
| | | TCX | DCB |
| K40542 | +26 | | |
| K40543 | +26 | | |
| K40544 | +29 | 1 | 1 |
| K40545 | +26 | | |
| K40546 | +26 | | |
| K40547 | +29 | | |
| K40548 | +26 | | |
| K40549 | +26 | | |
| K40550 | +26 | | |
| K40552 | +26 | | |
| K40553 | +26 | | |
| K40554 | +26 | | |
| K40555 | +26 | | |
| K40556 | +25 | | |
| K40557 | +26 | | |
| K40568 | +26 | | |
| K40569 | +26 | | |
| K40570 | +26 | | |
| K40571 | +26 | | |
| K40572 | +26 | | |
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Surrogate Standards
 TCX Tetrachloro-m-xylene
 DCB Decachlorobiphenyl

Qualifiers:
 D Surrogates diluted out
 1 Recovery high
 1 Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: HP3327
 Column: RTX-35 / RTX-5

| Date: | 2/18/98- 2/19/98 | 2/20/98 | 2/20/98 | 2/21 | 2/21 | 2/21 | 2/21 | 2/21 |
|----------------------|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | | 2251 | 2317 | 0435 | 0001 | 1204 | 1231 | 1748 |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | %D | %D | %D | %D | %D | %D | %D |
| Aroclor 1016 | ok | | | | | | | |
| Aroclor 1221 | ok | | | | | | | |
| Aroclor 1232 | ok | | | | | | | |
| Aroclor 1242 | ok | | ok | | | | | |
| Aroclor 1248 | ok | ok | | ok | | ok | | ok |
| Aroclor 1254 | ok | | | | ok | | | |
| Aroclor 1260 | ok | | | | | | ok | |
| Tetrachloro-m-xylene | ok | | | | | | | |
| Decachlorobiphenyl | ok | | | | | | | |
| Affected Samples: | | | | | | | | |
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PCB Calibration Summary - Page 2

Instrument: HP3327
 Column: RTX-35 / RTX-5

| Date: | 2/18/98- 2/19/98 | 2/21/98 | 2/23/98 | 2/23 | 2/24 | 2/24 | | |
|----------------------|---------------------|---------------|---------------|---------------|---------------|---------------|--|--|
| Time: | | 1815 | 2329 | 2355 | 0141 | 0207 | | |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | | |
| | %RSD | %D | %D | %D | %D | %D | | |
| Aroclor 1016 | ok | | | | | | | |
| Aroclor 1221 | ok | | | | | | | |
| Aroclor 1232 | ok | | | | | | | |
| Aroclor 1242 | ok | ok | | ok | | | | |
| Aroclor 1248 | ok | | ok | | ok | | | |
| Aroclor 1254 | ok | | | | | ok | | |
| Aroclor 1260 | ok | | | | | | | |
| Tetrachloro-m-xylene | ok | | | | | | | |
| Decachlorobiphenyl | ok | | | | | | | |
| Affected Samples: | | | | | | | | |
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CORRECTED ANALYSIS SUMMARY FORMS

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40542

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH03

Phase Type: BIOTA

Lab Sample ID: 345446

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/21/98

% Solids: 100 ~~100~~ *100*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | <i>U</i> |
| 11104-28-2 | Aroclor-1221 | 50 | <i>R</i> |
| 11141-16-5 | Aroclor-1232 | 50 | <i>R</i> |
| 53469-21-9 | Aroclor-1242 | 50 | <i>R</i> |
| 12672-29-6 | Aroclor-1248 | 260 | |
| 11097-69-1 | Aroclor-1254 | 170 | |
| 11096-82-5 | Aroclor-1260 | 92 | |

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APR 07 1998

By *KPC*

**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40543

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH03

Phase Type: BIOTA

Lab Sample ID: 345447

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/21/98

% Solids: 100% 417M

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | Q 5 |
| 11104-28-2 | Aroclor-1221 | 50 | F 5 |
| 11141-16-5 | Aroclor-1232 | 50 | F 5 |
| 53469-21-9 | Aroclor-1242 | 50 | F 5 |
| 12672-29-6 | Aroclor-1248 | 170 | 44 5 |
| 11097-69-1 | Aroclor-1254 | 150 | 44 |
| 11096-82-5 | Aroclor-1260 | 43 | J |

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APR 07 1998

**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40544

| | | | | |
|-------------------|-----------------------------------|------------------|-----------------|--------------------|
| Lab Name: | <u>ITS Environmental</u> | Lab Code: | <u>INCHVT</u> | |
| Contract: | <u>91082</u> | Case: | <u>PCB</u> | SDG: <u>FISH03</u> |
| Phase Type: | <u>BIOTA</u> | Lab Sample ID: | <u>345448</u> | |
| Phase Weight: | <u>10.0</u> (g) | Date Received: | <u>10/18/97</u> | |
| Injection Volume: | <u>1.0</u> (uL) | Date Extracted: | <u>12/17/97</u> | |
| Dilution Factor: | <u>4.0</u> | Date Analyzed: | <u>02/24/98</u> | |
| % Solids: | <u>100% 100 41.14%</u> | Sulfur Clean-up: | <u>Y</u> | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 200 | u G |
| 11104-28-2 | Aroclor-1221 | 200 | u G |
| 11141-16-5 | Aroclor-1232 | 200 | u G |
| 53469-21-9 | Aroclor-1242 | 200 | u G |
| 12672-29-6 | Aroclor-1248 | 930 | u H |
| 11097-69-1 | Aroclor-1254 | 1400 | u H |
| 11096-82-5 | Aroclor-1260 | 290 | u H |

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**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40545

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH03

Phase Type: BIOTA

Lab Sample ID: 345449

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/21/98

% Solids: 100% *AK* ATLAS

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-------------------|
| 12674-11-2 | Aroclor-1016 | 50 | <i>H</i> <i>5</i> |
| 11104-28-2 | Aroclor-1221 | 50 | <i>H</i> <i>5</i> |
| 11141-16-5 | Aroclor-1232 | 50 | <i>H</i> <i>5</i> |
| 53469-21-9 | Aroclor-1242 | 60 | <i>H</i> <i>5</i> |
| 12672-29-6 | Aroclor-1248 | 50 | <i>H</i> <i>5</i> |
| 11097-69-1 | Aroclor-1254 | 280 | <i>H</i> <i>5</i> |
| 11096-82-5 | Aroclor-1260 | 44 | <i>J</i> |

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By *AK*

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40546

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH03

Phase Type: BIOTA

Lab Sample ID: 345450

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/21/98

% Solids: 100% *ATK*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|---------------------|
| 12674-11-2 | Aroclor-1016 | 50 | <i>R</i> <i>50</i> |
| 11104-28-2 | Aroclor-1221 | 50 | <i>R</i> <i>50</i> |
| 11141-16-5 | Aroclor-1232 | 50 | <i>R</i> <i>50</i> |
| 53469-21-9 | Aroclor-1242 | 50 | <i>R</i> <i>50</i> |
| 12672-29-6 | Aroclor-1248 | 430 | <i>R</i> <i>430</i> |
| 11097-69-1 | Aroclor-1254 | 50 | <i>R</i> <i>50</i> |
| 11096-82-5 | Aroclor-1260 | 110 | <i>R</i> <i>110</i> |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40547

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH03

Phase Type: BIOTA

Lab Sample ID: 345451

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 4.0

Date Analyzed: 02/24/98

% Solids: 100% *ATTN*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|------------------|
| 12674-11-2 | Aroclor-1016 | 200 | 4 <i>5/13/98</i> |
| 11104-28-2 | Aroclor-1221 | 200 | 4 <i>5/13/98</i> |
| 11141-16-5 | Aroclor-1232 | 200 | 4 <i>5/13/98</i> |
| 53469-21-9 | Aroclor-1242 | 200 | 4 <i>5/13/98</i> |
| 12672-29-6 | Aroclor-1248 | 1300 | <i>5/13/98</i> |
| 11097-69-1 | Aroclor-1254 | 3000 | <i>5/13/98</i> |
| 11096-82-5 | Aroclor-1260 | 200 | 4 <i>5/13/98</i> |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40548

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH03

Phase Type: BIOTA

Lab Sample ID: 345452

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/21/98

% Solids: 200 (K) 47116

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | W LT |
| 11104-28-2 | Aroclor-1221 | 50 | W LT |
| 11141-16-5 | Aroclor-1232 | 50 | W LT |
| 53469-21-9 | Aroclor-1242 | 240 | UN |
| 12672-29-6 | Aroclor-1248 | 50 | W LT |
| 11097-69-1 | Aroclor-1254 | 50 | W LT |
| 11096-82-5 | Aroclor-1260 | 110 | UN |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40549

| | | | | | |
|-------------------|------------------------------|------------------|-----------------|------|---------------|
| Lab Name: | <u>ITS Environmental</u> | Lab Code: | <u>INCHVT</u> | SDG: | <u>FISH03</u> |
| Contract: | <u>91082</u> | Case: | <u>PCB</u> | | |
| Phase Type: | <u>BIOTA</u> | Lab Sample ID: | <u>345453</u> | | |
| Phase Weight: | <u>10.0</u> (g) | Date Received: | <u>10/18/97</u> | | |
| Injection Volume: | <u>1.0</u> (uL) | Date Extracted: | <u>12/17/97</u> | | |
| Dilution Factor: | <u>3.0</u> | Date Analyzed: | <u>02/21/98</u> | | |
| % Solids: | <u>200 <i>ppm</i> 4/1/98</u> | Sulfur Clean-up: | <u>Y</u> (Y/N) | | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|--------------------|
| 12674-11-2 | Aroclor-1016 | 150 | <i>u</i> <i>13</i> |
| 11104-28-2 | Aroclor-1221 | 150 | <i>u</i> <i>13</i> |
| 11141-16-5 | Aroclor-1232 | 150 | <i>u</i> <i>13</i> |
| 63469-21-9 | Aroclor-1242 | 150 | <i>u</i> <i>13</i> |
| 12672-29-6 | Aroclor-1248 | 150 | <i>u</i> <i>13</i> |
| 11097-69-1 | Aroclor-1254 | 1000 | <i>u</i> <i>13</i> |
| 11096-82-5 | Aroclor-1260 | 150 | <i>u</i> <i>13</i> |

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000077

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40550

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH03

Phase Type: BIOTA

Lab Sample ID: 345454

Phase Weight: 10.0 (g)

Date Received: 10/18/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/21/98

% Solids: 100% 41748

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | 45 |
| 11104-28-2 | Aroclor-1221 | 50 | 45 |
| 11141-16-5 | Aroclor-1232 | 50 | 45 |
| 53469-21-9 | Aroclor-1242 | 50 | 45 |
| 12672-29-6 | Aroclor-1248 | 270 550 | 45 |
| 11097-69-1 | Aroclor-1254 | 230 50 | 45 |
| 11096-82-5 | Aroclor-1260 | 60 120 | 45 |

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AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40552

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH03

Phase Type: BIOTA

Lab Sample ID: 345510

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 3.0

Date Analyzed: 02/21/98

% Solids: 100% 11/11/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 150 | u 5 |
| 11104-28-2 | Aroclor-1221 | 150 | u 5 |
| 11141-16-5 | Aroclor-1232 | 150 | u 5 |
| 53469-21-9 | Aroclor-1242 | 150 | u 5 |
| 12672-29-6 | Aroclor-1248 | 150 | u 5 |
| 11097-69-1 | Aroclor-1254 | 150 | u 5 |
| 11096-82-5 | Aroclor-1260 | 270 | u 5 |

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EPA SAMPLE NO.

K40553

| | | | | |
|-------------------|--------------------------|------------------|-----------------|--------------------|
| Lab Name: | <u>ITS Environmental</u> | Lab Code: | <u>INCHVT</u> | |
| Contract: | <u>91082</u> | Case: | <u>PCB</u> | SDG: <u>FISH03</u> |
| Phase Type: | <u>BIOTA</u> | Lab Sample ID: | <u>345511</u> | |
| Phase Weight: | <u>10.0</u> | Date Received: | <u>10/23/97</u> | |
| Injection Volume: | <u>1.0</u> | Date Extracted: | <u>12/17/97</u> | |
| Dilution Factor: | <u>1.0</u> | Date Analyzed: | <u>02/21/98</u> | |
| % Solids: | <u>100% K40553</u> | Sulfur Clean-up: | <u>Y</u> | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | # 5 |
| 11104-28-2 | Aroclor-1221 | 50 | # 5 |
| 11141-16-5 | Aroclor-1232 | 50 | # 5 |
| 53469-21-9 | Aroclor-1242 | 50 | # 5 |
| 12672-29-6 | Aroclor-1248 | 50 | # 5 |
| 11097-69-1 | Aroclor-1254 | 87 | J |
| 11096-82-5 | Aroclor-1260 | 34 | J |

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EPA SAMPLE NO.

K40554

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH03

Phase Type: BIOTA

Lab Sample ID: 345512

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 3.0

Date Analyzed: 02/21/98

% Solids: 100% 47.4%

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 150 | 45 |
| 11104-28-2 | Aroclor-1221 | 150 | 45 |
| 11141-16-5 | Aroclor-1232 | 150 | 45 |
| 53469-21-9 | Aroclor-1242 | 150 | 45 |
| 12672-29-6 | Aroclor-1248 | 150 | 45 |
| 11097-69-1 | Aroclor-1254 | 190 | 44 |
| 11096-82-5 | Aroclor-1260 | 460 | 44 |

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EPA SAMPLE NO.

K40555

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH03

Phase Type: BIOTA

Lab Sample ID: 345513

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 2.0

Date Analyzed: 02/21/98

% Solids: 100% 4/1/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 100 | ✓ 5 |
| 11104-28-2 | Aroclor-1221 | 100 | ✓ 5 |
| 11141-16-5 | Aroclor-1232 | 100 | ✓ 5 |
| 53469-21-9 | Aroclor-1242 | 100 | ✓ 5 |
| 12672-29-6 | Aroclor-1248 | 100 | ✓ 5 |
| 11097-69-1 | Aroclor-1254 | 310 | ✓ 4 |
| 11096-82-5 | Aroclor-1260 | 80 | J |

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EPA SAMPLE NO.

K40556

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH03

Phase Type: BIOTA

Lab Sample ID: 345514

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/21/98

% Solids: 100 Kk 417 MK

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | # 55 |
| 11104-28-2 | Aroclor-1221 | 50 | # 55 |
| 11141-16-5 | Aroclor-1232 | 50 | # 55 |
| 53469-21-9 | Aroclor-1242 | 50 | # 55 |
| 12672-29-6 | Aroclor-1248 | 50 | # 55 |
| 11097-69-1 | Aroclor-1254 | 520 | # 55 |
| 11096-82-5 | Aroclor-1260 | 100 | # 55 |

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EPA SAMPLE NO.

K40557

| | | | | | |
|-------------------|--------------------------|----------------|------------------|-----------------|---------------|
| Lab Name: | <u>ITS Environmental</u> | Lab Code: | <u>INCHVT</u> | SDG: | <u>FISH03</u> |
| Contract: | <u>91082</u> | Case: | <u>PCB</u> | | |
| Phase Type: | <u>BIOTA</u> | Lab Sample ID: | <u>345515</u> | | |
| Phase Weight: | <u>10.0</u> | (g) | Date Received: | <u>10/23/97</u> | |
| Injection Volume: | <u>1.0</u> | (uL) | Date Extracted: | <u>12/17/97</u> | |
| Dilution Factor: | <u>1.0</u> | | Date Analyzed: | <u>02/21/98</u> | |
| % Solids: | <u>100% 4/1/98</u> | | Sulfur Clean-up: | <u>Y</u> | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | 4 55 |
| 11104-28-2 | Aroclor-1221 | 50 | 4 55 |
| 11141-16-6 | Aroclor-1232 | 50 | 4 55 |
| 53469-21-9 | Aroclor-1242 | 50 | 4 55 |
| 12672-29-6 | Aroclor-1248 | 50 | 4 55 |
| 11097-69-1 | Aroclor-1254 | 140 | 4 55 |
| 11096-82-5 | Aroclor-1260 | 32 | J |

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00014

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40568

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH03

Phase Type: BIOTA

Lab Sample ID: 345516

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/21/98

% Solids: 100% *Wt* *ANAL*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | <i>5</i> |
| 11104-28-2 | Aroclor-1221 | 50 | <i>5</i> |
| 11141-16-5 | Aroclor-1232 | 50 | <i>5</i> |
| 53469-21-9 | Aroclor-1242 | 50 | <i>5</i> |
| 12672-29-6 | Aroclor-1248 | 110 | <i>5</i> |
| 11097-69-1 | Aroclor-1254 | 140 | <i>5</i> |
| 11096-82-5 | Aroclor-1260 | 58 | <i>5</i> |

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**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40569

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH03

Phase Type: BIOTA

Lab Sample ID: 345517

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 5.0

Date Analyzed: 02/21/98

% Solids: 100 VEC 4/11/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 250 | U 5 |
| 11104-28-2 | Aroclor-1221 | 250 | U 5 |
| 11141-16-5 | Aroclor-1232 | 250 | U 5 |
| 53469-21-9 | Aroclor-1242 | 250 | U 5 |
| 12672-29-6 | Aroclor-1248 | 250 | U 5 |
| 11097-69-1 | Aroclor-1254 | 1400 | U 5 |
| 11096-82-5 | Aroclor-1260 | 250 | J |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40570

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH03

Phase Type: BIOTA

Lab Sample ID: 345518

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 3.0

Date Analyzed: 02/21/98

% Solids: 100% K4 4/11/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 150 | 4 55 |
| 11104-28-2 | Aroclor-1221 | 150 | 4 55 |
| 11141-16-5 | Aroclor-1232 | 150 | 4 55 |
| 53469-21-9 | Aroclor-1242 | 150 | 4 55 |
| 12672-29-6 | Aroclor-1248 | 150 | 4 55 |
| 11097-69-1 | Aroclor-1254 | 730 | 4 55 |
| 11096-82-5 | Aroclor-1260 | 180 | 4 55 |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40671

Lab Name: ITS Environmental

Lab Code: WCHVT

Contract: 91082

Case: PCB

SDG: FISH03

Phase Type: BIOTA

Lab Sample ID: 345519

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/21/98

% Solids: 100% *AK*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|------------|
| 12674-11-2 | Aroclor-1016 | 50 | R <i>5</i> |
| 11104-28-2 | Aroclor-1221 | 50 | R <i>5</i> |
| 11141-16-5 | Aroclor-1232 | 50 | R <i>5</i> |
| 53469-21-9 | Aroclor-1242 | 50 | R <i>5</i> |
| 12672-29-6 | Aroclor-1248 | 150 | <i>4</i> |
| 11097-69-1 | Aroclor-1254 | 370 | <i>4</i> |
| 11096-82-5 | Aroclor-1260 | 47 | J |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40572

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH03

Phase Type: BIOTA

Lab Sample ID: 345520

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/17/97

Dilution Factor: 1.0

Date Analyzed: 02/21/98

% Solids: 100 KPC 1/17/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | # 5/5 |
| 11104-28-2 | Aroclor-1221 | 50 | # 5/5 |
| 11141-16-5 | Aroclor-1232 | 50 | # 5/5 |
| 53469-21-9 | Aroclor-1242 | 50 | # 5/5 |
| 12672-29-6 | Aroclor-1248 | 190 | # 5/5 |
| 11097-69-1 | Aroclor-1254 | 300 | # 5/5 |
| 11096-82-5 | Aroclor-1260 | 88 | # 5/5 |

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PERCENT LIPID ANALYSES

Percent Lipids Results

| Sample ID | Lab ID | Matrix | Result |
|-----------|--------|--------|--------|
| K40542 | 345446 | tissue | 0.4% |
| K40543 | 345447 | tissue | 1.4% |
| K40544 | 345448 | tissue | 0.3% |
| K40545 | 345449 | tissue | 0.8% |
| K40546 | 345450 | tissue | 0.7% |
| K40547 | 345451 | tissue | 0.6% |
| K40548 | 345452 | tissue | 0.3% |
| K40549 | 345453 | tissue | 0.7% |
| K40550 | 345454 | tissue | 0.7% |
| K40552 | 345510 | tissue | 0.4% |
| K40553 | 345511 | tissue | 0.2% |
| K40554 | 345512 | tissue | 1.0% |
| K40555 | 345513 | tissue | 0.6% |
| K40556 | 345514 | tissue | 0.8% |
| K40557 | 345515 | tissue | 0.3% |
| K40568 | 345516 | tissue | 0.4% |
| K40569 | 345517 | tissue | 1.1% |
| K40570 | 345518 | tissue | 0.3% |
| K40571 | 345519 | tissue | 0.3% |
| K40572 | 345520 | tissue | 0.4% |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

CHAIN OF CUSTODY



6723 Towpath Road, P.O. Box 66
Syracuse, New York 13214-0066
TEL: (315) 446-9120

CHAIN OF CUSTODY RECORD

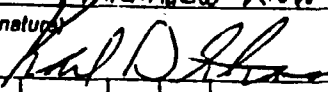
000004

| | | | | | | | | | | | | | | | | | | | |
|---|----------|---|---------------|---|--|---|---------------|--|------|------------------------------|--|--|--|--|--|---------|--|--|---|
| PROJ. NO. 64524711 | | PROJECT NAME Kalamazoo River Resident Fish | | | | Whole Fish Number of Containers PLA (Ancho) g Lipids | | | | | | | | | | REMARKS | | | |
| SAMPLERS: (Signature) K. D. [Signature] | | | | | | | | | | | | | | | | | | | |
| STA NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | | | | | | | | | | | | | | |
| K 40504-C1 | 10/14/97 | 14:00 | X | | New Richmond ABSA #11 Juvenile Sm Bass | 1 | X | X | | | | | | | | | | | Combine K40504-C2 with K40504-C1 (provided each) |
| K 40530-C | | | | | | | | | | | | | | | | | | | Process all Juvenile bass composite samples as |
| K 40531-C | | | | | | | | | | | | | | | | | | | whole-body composites and analyze following analytical |
| K 40532-C | | | | | | | | | | | | | | | | | | | procedures discussed previously. |
| K 40533-C | 10/17/97 | 10:00 | X | | Lake Allegan ABSA #9 Juvenile Sm Bass | | | | | | | | | | | | | | |
| K 40534-C1 | " | " | " | | " | | | | | | | | | | | | | | * Return C-1 to combine with 40534-C2 which will follow |
| K 40535 | 10/17/97 | 10:00 | | X | Lake Allegan ABSA #9 Adult Comp. | 1 | X | X | | | | | | | | | | | Fillet comp (skin-off fillets) and bass (skin-on, |
| K 40536 | | | | | | | | | | | | | | | | | | | scales-on fillets) and analyze fillets following |
| K 40537 | | | | | | | | | | | | | | | | | | | analytical procedures discussed previously. |
| K 40538 | | | | | | | | | | | | | | | | | | | |
| K 40539 | | | | | | | | | | | | | | | | | | | |
| K 40540 | | | | | Lake Allegan ABSA #9 Adult Bass | | | | | | | | | | | | | | |
| K 40541 | | | | | | | | | | | | | | | | | | | |
| K 40542 | | | | | | | | | | | | | | | | | | | |
| Relinquished by: (Signature) K. D. [Signature] | | DATE 10/17/97 | TIME 16:30 | Received by: (Signature) [Signature] | | Relinquished by: (Signature) | | DATE | TIME | Relinquished by: (Signature) | | | | | | | | | |
| Relinquished by: (Signature) | | DATE | TIME | Received by: (Signature) | | Relinquished by: (Signature) | | DATE | TIME | Relinquished by: (Signature) | | | | | | | | | |
| Relinquished by: (Signature) | | DATE | TIME | Received for Laboratory by: (Signature) Mason Mier | | DATE 10/18/97 | TIME 11:45 | Remarks: COPY - ORIGINAL ON FILE SDG # 11101 ETR # 67075 | | | | | | | | | | | |


**6723 Towpath Road, P.O. Box 66
Syracuse, New York 13214-0066
TEL: (315) 446-9120**

CHAIN OF CUSTODY RECORD

5000

| PROJ. NO. | | PROJECT NAME | | Whole Fish | | Number of Containers | | + PCBs (Aroclor) | | + 96 Lipids | | REMARKS | |
|---|--|-------------------------------|--|------------|--|----------------------|--|------------------|--|-------------|--|----------------------------------|--|
| 64524711 | | Baltimore River Resident fish | | | | | | | | | | | |
| SAMPLERS: (Signature) | | | | STA. NO. | | DATE | | TIME | | COMP. | | STATION LOCATION | |
|  | | | | K40543 | | 10/14/97 | | 15:30 | | X | | New Richmond ABFA #11 Adult Carp | |
| | | | | K40544 | | 10/14/97 | | 15:30 | | X | | New Richmond ABFA #11 Adult Carp | |
| | | | | K40545 | | | | | | | | | |
| | | | | K40546 | | | | | | | | | |
| | | | | K40547 | | | | | | | | | |
| | | | | K40548 | | | | | | | | | |
| K40549 | | | | | | | | | | | | | |
| K40550 | | | | | | | | | | | | | |

Fillet and a carp (SKIN-off fillets) and bass (SKIN-on, Scales-on) and analyze fillets following analytical procedures discussed previously.

| | | | | | | | | | | | |
|--|--|----------|-------|---|--|------------------------------|------|----------|------|------------------------------|--|
| Relinquished by: (Signature) | | DATE | TIME | Received by: (Signature) | | Relinquished by: (Signature) | | DATE | TIME | Relinquished by: (Signature) | |
|  | | 10/17/97 | 16:30 | | | | | | | | |
| Relinquished by: (Signature) | | DATE | TIME | Received by: (Signature) | | Relinquished by: (Signature) | | DATE | TIME | Relinquished by: (Signature) | |
| | | | | | | | | | | | |
| Relinquished by: (Signature) | | DATE | TIME | Received for Laboratory by: (Signature) | | DATE | TIME | Remarks: | | | |
| | | | | | | | | | | | |

DATA REVIEW FOR
ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER
SUPERFUND SITE

SDG# FISH04

PCB ANALYSES

BIOTA

Analyses performed by:

ITS Environmental, Inc.
Colchester, Vermont

Review performed by:

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Blasland, Bouck & Lee, Inc.
Syracuse, New York

Summary

The following is an assessment of the PCB data package for SDG# FISH04 for the analysis of tissue from the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and sample results for PCB and Lipid analyses. Analyses were performed on the following samples:

| Sample ID | Lab ID | Matrix | Sampling Date | Analyses | | | | |
|-----------|--------|--------|---------------|----------|-----|-----|-----|--------|
| | | | | VOA | BNA | PCB | TAL | %LIPID |
| K40573 | 345521 | tissue | 10/21/97 | | | x | | x |
| K40574 | 345522 | tissue | 10/21/97 | | | x | | x |
| K40551-C | 345523 | tissue | 10/20/97 | | | x | | x |
| K40564-C | 345524 | tissue | 10/21/97 | | | x | | x |
| K40565-C | 345525 | tissue | 10/21/97 | | | x | | x |
| K40566-C | 345526 | tissue | 10/21/97 | | | x | | x |
| K40567-C | 345527 | tissue | 10/21/97 | | | x | | x |
| K40558 | 345528 | tissue | 10/20/97 | | | x | | x |
| K40559 | 345529 | tissue | 10/20/97 | | | x | | x |
| K40560 | 345530 | tissue | 10/20/97 | | | x | | x |
| K40561 | 345531 | tissue | 10/20/97 | | | x | | x |
| K40562 | 345532 | tissue | 10/20/97 | | | x | | x |
| K40563 | 345533 | tissue | 10/20/97 | | | x | | x |
| K40575 | 345534 | tissue | 10/21/97 | | | x | | x |
| K40576 | 345535 | tissue | 10/21/97 | | | x | | x |
| K40577 | 345536 | tissue | 10/21/97 | | | x | | x |
| K40578 | 345537 | tissue | 10/21/97 | | | x | | x |
| K40579 | 345538 | tissue | 10/21/97 | | | x | | x |
| K40580 | 345539 | tissue | 10/21/97 | | | x | | x |
| K40582 | 345540 | tissue | 10/21/97 | | | x | | x |
| | | | | | | | | |

PCB ANALYSES

PCB Data Review Checklist - Page 2

| | YES | NO | NA |
|---|---------------|---------------|---------------|
| <u>Calibration and GC Performance</u> | | | |
| Are the following chromatograms and data printouts present? | | | |
| Aroclor 1016/1260 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1221 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1232 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1242 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1248 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1254 | <u>X</u> | <u> </u> | <u> </u> |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence? | <u>X</u> | <u> </u> | <u> </u> |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | <u>X</u> | <u> </u> | <u> </u> |
| Have all samples been injected within a 12 hour period beginning with the injection of a calibration standard? | <u>X</u> | <u> </u> | <u> </u> |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed? | <u>X</u> | <u> </u> | <u> </u> |
| Are %D values for all compounds within limits (less than 15%)? | <u>X</u> | <u> </u> | <u> </u> |
| <u>Analytical Sequence Check</u> | | | |
| Is a analytical sequence form present and complete for each column and each period of analyses? | <u>X</u> | <u> </u> | <u> </u> |
| Was the proper analytical sequence followed? | <u>X</u> | <u> </u> | <u> </u> |
| <u>Cleanup Efficiency Verification</u> | | | |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | <u> </u> | <u> </u> | <u>X</u> |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | <u>X</u> | <u> </u> | <u> </u> |
| <u>PCB Identification</u> | | | |
| Is both a combined and single column Aroclor Identification Report present for every sample? | <u>X</u> | <u> </u> | <u> </u> |
| Do the combined column and individual column Aroclor identifications agree? | <u>X</u> | <u> </u> | <u> </u> |
| Were there any false negatives? | <u> </u> | <u>X</u> | <u> </u> |

PCB Data Review Checklist - Page 3

| | YES | NO | NA |
|--|-------------|-------------|-------------|
| Was GC/MS confirmation provided when required? | _____ | _____ | _____X_____ |
| <u>Compound Quantitation and Reported Detection Limits</u> | | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | _____X_____ | _____ | _____ |
| <u>Chromatogram Quality</u> | | | |
| Were the baselines stable? | _____X_____ | _____ | _____ |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | _____ | _____X_____ | _____ |
| <u>Field Duplicates</u> | | | |
| Were field duplicates submitted with the samples? | _____ | _____ | _____X_____ |

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40574

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345522

Phase Weight: 10.3 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/23/98

Dilution Factor: 1.0

Date Analyzed: 03/05/98

% Solids: 100% 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 49 | U |
| 11104-28-2 | Aroclor-1221 | 49 | U |
| 11141-16-5 | Aroclor-1232 | 49 | U |
| 53469-21-9 | Aroclor-1242 | 49 | U |
| 12672-29-6 | Aroclor-1248 | 130 | |
| 11097-69-1 | Aroclor-1254 | 230 | |
| 11096-82-5 | Aroclor-1260 | 53 | |

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APR 08 1998

By KPC

000018

**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40551-C

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345523

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/26/98

Dilution Factor: 2.0

Date Analyzed: 03/05/98

% Solids: 100% 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 100 | U |
| 11104-28-2 | Aroclor-1221 | 100 | U |
| 11141-16-5 | Aroclor-1232 | 100 | U |
| 53469-21-9 | Aroclor-1242 | 100 | U |
| 12672-29-6 | Aroclor-1248 | 100 | U |
| 11097-69-1 | Aroclor-1254 | 220 | |
| 11096-82-5 | Aroclor-1260 | 100 | U |

REVISE
APR 08 1998

By KPC
000027

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40564-C

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345524

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/26/98

Dilution Factor: 5.0

Date Analyzed: 03/05/98

% Solids: 100% 41848

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 250 | U |
| 11104-28-2 | Aroclor-1221 | 250 | U |
| 11141-16-5 | Aroclor-1232 | 250 | U |
| 53469-21-9 | Aroclor-1242 | 250 | U |
| 12672-29-6 | Aroclor-1248 | 350 | |
| 11097-69-1 | Aroclor-1254 | 640 | |
| 11096-82-5 | Aroclor-1260 | 220 | J |

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40565-C

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345525

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/26/98

Dilution Factor: 10.0

Date Analyzed: 03/05/98

% Solids: 100% 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 500 | U |
| 11104-28-2 | Aroclor-1221 | 500 | U |
| 11141-16-5 | Aroclor-1232 | 500 | U |
| 53469-21-9 | Aroclor-1242 | 500 | U |
| 12672-29-6 | Aroclor-1248 | 700 | |
| 11097-69-1 | Aroclor-1254 | 440 | J |
| 11096-82-5 | Aroclor-1260 | 500 | U |

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By KLC

000045

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40566-C

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345526

Phase Weight: 10.1 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/26/98

Dilution Factor: 3.0

Date Analyzed: 03/05/98

% Solids: 100 *YK* 4/5/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 150 | U |
| 11104-28-2 | Aroclor-1221 | 150 | U |
| 11141-16-5 | Aroclor-1232 | 150 | U |
| 53469-21-9 | Aroclor-1242 | 150 | U |
| 12672-29-6 | Aroclor-1248 | 670 | |
| 11097-69-1 | Aroclor-1254 | 660 | |
| 11096-82-5 | Aroclor-1260 | 170 | |

REVISE
APR 08 1998

By *YK*

000054

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40567-C

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345527

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/26/98

Dilution Factor: 2.0

Date Analyzed: 03/05/98

% Solids: 100 *YK* 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 100 | U |
| 11104-28-2 | Aroclor-1221 | 100 | U |
| 11141-16-5 | Aroclor-1232 | 100 | U |
| 53469-21-9 | Aroclor-1242 | 100 | U |
| 12672-29-6 | Aroclor-1248 | 320 | |
| 11097-69-1 | Aroclor-1254 | 190 | |
| 11096-82-5 | Aroclor-1260 | 100 | U |

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By *YK*

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40558

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345528

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/26/98

Dilution Factor: 1.0

Date Analyzed: 03/05/98

% Solids: 100 KPC 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 72 | |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40559

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345529

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/23/98

Dilution Factor: 1.0

Date Analyzed: 03/05/98

% Solids: 100% KAC 4/18/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 28 | J |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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By

KAC

000081

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40560

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345530

Phase Weight: 10.2 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/23/98

Dilution Factor: 1.0

Date Analyzed: 03/05/98

% Solids: 100% *KK* 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 49 | U |
| 11104-28-2 | Aroclor-1221 | 49 | U |
| 11141-16-5 | Aroclor-1232 | 49 | U |
| 53469-21-9 | Aroclor-1242 | 49 | U |
| 12672-29-6 | Aroclor-1248 | 49 | U |
| 11097-69-1 | Aroclor-1254 | 78 | |
| 11096-82-5 | Aroclor-1260 | 49 | U |

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APR 08 1998

KK
000090

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40561

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345531

Phase Weight: 10.2 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/23/98

Dilution Factor: 1.0

Date Analyzed: 03/05/98

% Solids: 100% *KPC* 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 49 | U |
| 11104-28-2 | Aroclor-1221 | 49 | U |
| 11141-16-5 | Aroclor-1232 | 49 | U |
| 53469-21-9 | Aroclor-1242 | 49 | U |
| 12672-29-6 | Aroclor-1248 | 49 | U |
| 11097-69-1 | Aroclor-1254 | 100 | |
| 11096-82-5 | Aroclor-1260 | 72 | |

REVISE
APR 08 1998

By *KPC*

000099

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40562

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345532

Phase Weight: 10.1 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/23/98

Dilution Factor: 1.0

Date Analyzed: 03/05/98

% Solids: 100% *KPC 4/8/98*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 44 | J |
| 11096-82-5 | Aroclor-1260 | 50 | U |

REVISE
APR 08 1998

By *KPC*

000108

**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40563

Lab Name: ITS Environmental

Lab Code: WCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345533

Phase Weight: 10.1 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/23/98

Dilution Factor: 1.0

Date Analyzed: 03/05/98

% Solids: 100% 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 83 | |
| 11096-82-5 | Aroclor-1260 | 50 | U |

REVISE
APR 08 1998

By KR

000117

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40575

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345534

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/23/98

Dilution Factor: 3.0

Date Analyzed: 03/05/98

% Solids: 100 KPL 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 150 | U |
| 11104-28-2 | Aroclor-1221 | 150 | U |
| 11141-16-5 | Aroclor-1232 | 150 | U |
| 53469-21-9 | Aroclor-1242 | 150 | U |
| 12672-29-6 | Aroclor-1248 | 150 | U |
| 11097-69-1 | Aroclor-1254 | 230 | |
| 11096-82-5 | Aroclor-1260 | 150 | U |

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APR 08 1998

By KPL

000126

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40576

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345535

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/23/98

Dilution Factor: 1.0

Date Analyzed: 03/05/98

% Solids: 100% 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 180 | |
| 11097-69-1 | Aroclor-1254 | 140 | |
| 11096-82-5 | Aroclor-1260 | 34 | J |

REVISED
APR 08 1998

By KRC

000134

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40577

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345536

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/23/98

Dilution Factor: 1.0

Date Analyzed: 03/05/98

% Solids: 200 Klu 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 140 | |
| 11097-69-1 | Aroclor-1254 | 150 | |
| 11096-82-5 | Aroclor-1260 | 31 | J |

REVISE
APR 08 1998

By KAC

ITS Environmental 55 South Park Drive Colchester, Vermont 05446

Telephone (802) 655-1203

Fax (802) 655-1248

00014

**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40578

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345537

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/23/98

Dilution Factor: 1.0

Date Analyzed: 03/05/98

% Solids: 100 KPC 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 130 | |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 250 | |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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By KPC

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40579

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345538

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/23/98

Dilution Factor: 1.0

Date Analyzed: 03/05/98

% Solids: 100 KPC 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 98 | |
| 11097-69-1 | Aroclor-1254 | 170 | |
| 11096-82-5 | Aroclor-1260 | 33 | J |

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By KPC

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40580

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345539

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/23/98

Dilution Factor: 1.0

Date Analyzed: 03/05/98

% Solids: 100% 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-6 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | J |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 110 | |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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APR 08 1998

By KPC

000170

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40581

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345540

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/23/98

Dilution Factor: 1.0

Date Analyzed: 03/05/98

% Solids: 100% 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 150 | |
| 11097-69-1 | Aroclor-1254 | 160 | |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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By KPC

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40581MS

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345540MS

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/23/98

Dilution Factor: 10.0

Date Analyzed: 03/05/98

% Solids: 100% *KAC 4/8/98*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 500 | U |
| 11104-28-2 | Aroclor-1221 | 500 | U |
| 11141-16-5 | Aroclor-1232 | 500 | U |
| 53469-21-9 | Aroclor-1242 | 6100 | |
| 12672-29-6 | Aroclor-1248 | 500 | U |
| 11097-59-1 | Aroclor-1254 | 6200 | |
| 11096-82-5 | Aroclor-1260 | 500 | U |

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APR 08 1998

By *KAC*

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40581MSD

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH04

Phase Type: BIOTA

Lab Sample ID: 345540MD

Phase Weight: 10.0 (g)

Date Received: 10/23/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/23/98

Dilution Factor: 10.0

Date Analyzed: 03/05/98

% Solids: 100% 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 500 | U |
| 11104-28-2 | Aroclor-1221 | 500 | U |
| 11141-16-5 | Aroclor-1232 | 500 | U |
| 53469-21-9 | Aroclor-1242 | 5400 | |
| 12672-29-6 | Aroclor-1248 | 500 | U |
| 11097-69-1 | Aroclor-1254 | 5500 | |
| 11096-82-5 | Aroclor-1260 | 500 | U |

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APR 08 1998

By Kee

PERCENT LIPID ANALYSES

Percent Lipids Results

| Sample ID | Lab ID | Matrix | Result |
|-----------|--------|--------|--------|
| K40574 | 345522 | tissue | 0.3% |
| K40551-C | 345523 | tissue | 1.6% |
| K40564-C | 345524 | tissue | 2.4% |
| K40565-C | 345525 | tissue | 2.9% |
| K40566-C | 345526 | tissue | 2.2% |
| K40567-C | 345527 | tissue | 3.2% |
| K40558 | 345528 | tissue | 0.6% |
| K40559 | 345529 | tissue | 0.2% |
| K40560 | 345530 | tissue | 0.4% |
| K40561 | 345531 | tissue | 0.3% |
| K40562 | 345532 | tissue | 0.4% |
| K40563 | 345533 | tissue | 0.3% |
| K40575 | 345534 | tissue | 0.5% |
| K40576 | 345535 | tissue | 0.6% |
| K40577 | 345536 | tissue | 0.4% |
| K40578 | 345537 | tissue | 0.7% |
| K40579 | 345538 | tissue | 0.3% |
| K40580 | 345539 | tissue | 0.4% |
| K40582 | 345540 | tissue | 0.4% |
| | | | |
| | | | |
| | | | |
| | | | |

CHAIN OF CUSTODY



SDG # FISH03 ETR # 67086

000004

10/23/95
59511801 CDR

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

CHAIN OF CUSTODY RECORD

000005

| PROJ. NO. | | PROJECT NAME | | | | <div style="display: flex; justify-content: space-between;"> <div>Whole Fish</div> <div>Internal Organs</div> <div>Fat (Anales)</div> <div>G. Livers</div> </div> | | | | | | | | | | REMARKS |
|-----------------------|----------|--------------|-------|------|-----------------------------|---|---|---|--|--|--|--|--|--|--|---------|
| SAMPLERS: (Signature) | | | | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | | | | | | | | | | | |
| K4524-11 | 10/21/97 | 16:00 | X | | Marmora Pond Juvenile Bass | | X | X | | | | | | | Analyze whole-body composite samples following analytical procedures discussed previously. | |
| K4554-C | 10/21/97 | 14:00 | X | | Lake Allegany Juvenile Bass | | | | | | | | | | Analyze whole-body composite samples following analytical procedures discussed previously. | |
| K4555-C | | | X | | | | | | | | | | | | | |
| K4556-C | | | X | | | | | | | | | | | | | |
| K4557-C | | | X | | | | | | | | | | | | | |
| K4558 | 10/21/97 | 11:00 | | X | Marmora Pond Sm Bass | | | | | | | | | | Fillet (Skin-on fillet) and analyze fillet. | |
| K4559 | | | | | | | | | | | | | | | Samples following analytical procedures discussed previously. | |
| K4560 | | | | | | | | | | | | | | | Analyze whole-body composite samples following analytical procedures discussed previously. | |
| K4561 | | | | | | | | | | | | | | | | |
| K4562 | | | | | | | | | | | | | | | | |
| K4563 | | | | | | | | | | | | | | | | |
| K4575 | 10/21/97 | 10:30 | | | Lake Allegany Bass | | | | | | | | | | Analyze whole-body composite samples following analytical procedures discussed previously. | |
| K4576 | | | | | | | | | | | | | | | | |
| K4577 | | | | | | | | | | | | | | | | |

| | | | | | | | |
|------------------------------|----------|-------|---|------------------------------|------|----------|------------------------------|
| Relinquished by: (Signature) | DATE | TIME | Received by: (Signature) | Relinquished by: (Signature) | DATE | TIME | Relinquished by: (Signature) |
| K4577 | 10/23/97 | 12:00 | | | | | |
| Relinquished by: (Signature) | DATE | TIME | Received by: (Signature) | Relinquished by: (Signature) | DATE | TIME | Relinquished by: (Signature) |
| | | | | | | | |
| Relinquished by: (Signature) | DATE | TIME | Received for Laboratory by: (Signature) | DATE | TIME | Remarks: | |
| | | | Frank Beato | 10-23-97 | 0930 | | |



6723 Towpath Road, P.O. Box 66
Syracuse, New York 13214-0066
TEL: (315) 446-9120

CHAIN OF CUSTODY RECORD

| PROJ. NO. | | PROJECT NAME | | | | <div>Whole Fish</div> <div>Number of Containers</div> <div>P.P.S. (Liquids)</div> <div>CF, Liquids</div> | | | | | | | | | | REMARKS | | |
|------------------------------|----------|----------------------------------|-------|------|----------------------|--|-------|---|---|--|--|------------------------------|--|------|--|----------|---|------------------------------|
| 61524711 | | Skeggon River NRCF Resident Fish | | | | | | | | | | | | | | | | |
| SAMPLERS: (Signature) | | | | | | | | | | | | | | | | 000000 | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | | | | | | | | | | | | | |
| K40518 | 10/21/97 | 12:50 | | X | Loke Allayon SM Bass | 1 | X | X | | | | | | | | | Fillet (skin on, scales on) and analyze fillets | |
| K40577 | 1 | 1 | | 1 | 1 | | 1 | 1 | 1 | | | | | | | | Following analytical procedures discussed | |
| K40580 | 1 | 1 | | 1 | 1 | | 1 | 1 | 1 | | | | | | | | previously | |
| K40581 | 1 | 1 | | 1 | 1 | | 1 | 1 | 1 | | | | | | | | 1 | |
| Relinquished by: (Signature) | | | | | | DATE | TIME | Received by: (Signature) | | | | Relinquished by: (Signature) | | | | DATE | TIME | Relinquished by: (Signature) |
| Relinquished by: (Signature) | | | | | | 10/21/97 | 12:00 | Received by: (Signature) | | | | Relinquished by: (Signature) | | | | DATE | TIME | Relinquished by: (Signature) |
| Relinquished by: (Signature) | | | | | | DATE | TIME | Received for Laboratory by: (Signature) | | | | DATE | | TIME | | Remarks: | | |
| | | | | | | | | 10-23-97 | | | | 0930 | | | | | | |

DATA REVIEW FOR
ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER
SUPERFUND SITE

SDG# FISH05

PCB ANALYSES

BIOTA

Analyses performed by:

ITS Environmental, Inc.
Colchester, Vermont

Review performed by:



Blasland, Bouck & Lee, Inc.
Syracuse, New York

Summary

The following is an assessment of the PCB data package for SDG# FISH05 for the analysis of tissue from the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and sample results for PCB and Lipid analyses. Analyses were performed on the following samples:

| Sample ID | Lab ID | Matrix | Sampling Date | Analyses | | | | |
|-----------|--------|--------|---------------|----------|-----|-----|-----|--------|
| | | | | VOA | BNA | PCB | TAL | %LIPID |
| K40584 | 345983 | tissue | 10/23/97 | | | x | | x |
| K40585 | 345984 | tissue | 10/23/97 | | | x | | x |
| K40586 | 345985 | tissue | 10/23/97 | | | x | | x |
| K40587 | 345986 | tissue | 10/23/97 | | | x | | x |
| K40595 | 345987 | tissue | 10/23/97 | | | x | | x |
| K40588 | 345988 | tissue | 10/23/97 | | | x | | x |
| K40589 | 345989 | tissue | 10/23/97 | | | x | | x |
| K40590 | 345990 | tissue | 10/23/97 | | | x | | x |
| K40591 | 345991 | tissue | 10/23/97 | | | x | | x |
| K40592 | 345992 | tissue | 10/23/97 | | | x | | x |
| K40593 | 345993 | tissue | 10/23/97 | | | x | | x |
| K40594 | 345994 | tissue | 10/230/97 | | | x | | x |
| K40505 | 345995 | tissue | 10/14/97 | | | x | | x |
| K40596 | 345996 | tissue | 10/14/97 | | | x | | x |
| K40597 | 345997 | tissue | 10/14/97 | | | x | | x |
| K40598 | 345998 | tissue | 10/14/97 | | | x | | x |
| K40599 | 345999 | tissue | 10/14/97 | | | x | | x |
| K40600 | 346000 | tissue | 10/14/97 | | | x | | x |
| K40601 | 346001 | tissue | 10/14/97 | | | x | | x |
| K60202 | 346002 | tissue | 10/14/97 | | | x | | x |
| | | | | | | | | |

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by ITS Environmental, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which is less likely to be affected by interferences. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

Since the samples were held in frozen storage, no holding time from date of collection applies; however, a holding time of 40 days from extraction to analysis has been applied to all samples.

All samples were analyzed beyond the specified holding time. Based on the deviation, all data has been qualified as estimated.

2. Blank Contamination

Quality assurance blanks, i.e., method, field or rinse blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure contamination of samples during field operations.

No target compounds were detected in the method blanks. Field blanks are not applicable to biota sampling.

3. System Performance

The system performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The initial calibration was within this limit for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limit for all Aroclors.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recovery for one surrogate was below control limits in sample K40587. Since recovery for the remaining surrogate was within control limits, no data has been qualified based on the deviation. Surrogates were diluted beyond the range of detection in samples K40584 and K40505. No data have been qualified based on diluted surrogates. All other surrogate recoveries were within control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

All Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

No matrix spike/matrix spike duplicate was included in this data set. No evaluation of matrix-specific performance could therefore be performed.

A matrix spike blank was extracted and analyzed with the samples. Since the matrix spike blank demonstrated acceptable recoveries, no action has been taken based on the lack of a matrix spike.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

DATA REVIEW CHECKLIST

PCB Data Review Checklist

| | YES | NO | NA |
|--|---------------|---------------|---------------|
| <u>Data Completeness and Deliverables</u> | | | |
| Is there a narrative or cover letter present? | <u>X</u> | <u> </u> | <u> </u> |
| Are the sample numbers included in the narrative? | <u>X</u> | <u> </u> | <u> </u> |
| Are the sample chain-of-custodies present? | <u>X</u> | <u> </u> | <u> </u> |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | <u> </u> | <u>X</u> | <u> </u> |
| <u>Holding Times</u> | | | |
| Have any holding times been exceeded? | <u>X</u> | <u> </u> | <u> </u> |
| <u>Surrogate Recovery</u> | | | |
| Are surrogate recovery forms present? | <u>X</u> | <u> </u> | <u> </u> |
| Are all the samples listed on the appropriate surrogate recovery form? | <u>X</u> | <u> </u> | <u> </u> |
| Were recoveries of TCX or DCB outside of specified limits for any sample or blank? | <u>X</u> | <u> </u> | <u> </u> |
| If yes, were the samples reanalyzed? | <u> </u> | <u>X</u> | <u> </u> |
| <u>Matrix Spikes</u> | | | |
| Is there a matrix spike recovery form present? | <u> </u> | <u>X</u> | <u> </u> |
| Were matrix spikes analyzed at the required frequency? | <u> </u> | <u>X</u> | <u> </u> |
| How many spike recoveries were outside of QC limits? | | | |
| <u>NA</u> out of <u>NA</u> | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| <u>NA</u> out of <u>NA</u> | | | |
| <u>Blanks</u> | | | |
| Is a Method Blank Summary Form present? | <u>X</u> | <u> </u> | <u> </u> |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | <u>X</u> | <u> </u> | <u> </u> |
| Do any method/reagent/instrument blanks have positive results? | <u> </u> | <u>X</u> | <u> </u> |
| Do any field/rinse blanks have positive results? | <u> </u> | <u> </u> | <u>X</u> |
| Are there field/rinse/equipment blanks associated with every sample? | <u> </u> | <u> </u> | <u>X</u> |

PCB Data Review Checklist - Page 2

| | YES | NO | NA |
|---|---------------|---------------|---------------|
| <u>Calibration and GC Performance</u> | | | |
| Are the following chromatograms and data printouts present? | | | |
| Aroclor 1016/1260 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1221 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1232 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1242 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1248 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1254 | <u>X</u> | <u> </u> | <u> </u> |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence? | <u>X</u> | <u> </u> | <u> </u> |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | <u>X</u> | <u> </u> | <u> </u> |
| Have all samples been injected within a 12 hour period beginning with the injection of a calibration standard? | <u>X</u> | <u> </u> | <u> </u> |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed? | <u>X</u> | <u> </u> | <u> </u> |
| Are %D values for all compounds within limits (less than 15%)? | <u>X</u> | <u> </u> | <u> </u> |
| <u>Analytical Sequence Check</u> | | | |
| Is a analytical sequence form present and complete for each column and each period of analyses? | <u>X</u> | <u> </u> | <u> </u> |
| Was the proper analytical sequence followed? | <u>X</u> | <u> </u> | <u> </u> |
| <u>Cleanup Efficiency Verification</u> | | | |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | <u> </u> | <u> </u> | <u>X</u> |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | <u>X</u> | <u> </u> | <u> </u> |
| <u>PCB Identification</u> | | | |
| Is both a combined and single column Aroclor Identification Report present for every sample? | <u>X</u> | <u> </u> | <u> </u> |
| Do the combined column and individual column Aroclor identifications agree? | <u>X</u> | <u> </u> | <u> </u> |
| Were there any false negatives? | <u> </u> | <u>X</u> | <u> </u> |

PCB Data Review Checklist - Page 3

| | YES | NO | NA |
|--|--------------|--------------|--------------|
| Was GC/MS confirmation provided when required? | _____ | _____ | <u> X </u> |
| <u>Compound Quantitation and Reported Detection Limits</u> | | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | <u> X </u> | _____ | _____ |
| <u>Chromatogram Quality</u> | | | |
| Were the baselines stable? | <u> X </u> | _____ | _____ |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | _____ | <u> X </u> | _____ |
| <u>Field Duplicates</u> | | | |
| Were field duplicates submitted with the samples? | _____ | _____ | <u> X </u> |

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding Time | Surrogates | |
|-----------|--------------|------------|-----|
| | | TCX | DCB |
| K40584 | +25 | D | D |
| K40585 | +25 | | |
| K40586 | +25 | | |
| K40587 | +25 | I | |
| K40595 | +25 | | |
| K40588 | +25 | | |
| K40589 | +25 | | |
| K40589 | +25 | | |
| K40591 | +25 | | |
| K40592 | +25 | | |
| K40593 | +25 | | |
| K40594 | +25 | | |
| K40505 | +25 | D | D |
| K40596 | +25 | | |
| K40597 | +25 | | |
| K40598 | +25 | | |
| K40599 | +25 | | |
| K40600 | +26 | | |
| K40601 | +26 | | |
| K40602 | +26 | | |
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Surrogate Standards
 TCX Tetrachloro-m-xylene
 DCB Decachlorobiphenyl

Qualifiers:
 D Surrogates diluted out
 I Recovery high
 L Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: HP3327
 Column: RTX-35 / RTX-5

| Date: | 2/18/98- 2/19/98 | 2/21/98 | 2/21/98 | 2/21 | 2/21 | 2/21 | 2/21 | 2/22 |
|----------------------|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | | 1204 | 1231 | 1748 | 1815 | 2332 | 2358 | 0211 |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | %D | %D | %D | %D | %D | %D | %D |
| Aroclor 1016 | ok | | | | | | | |
| Aroclor 1221 | ok | | | | | | | |
| Aroclor 1232 | ok | | | | | | | |
| Aroclor 1242 | ok | | | | ok | | | |
| Aroclor 1248 | ok | ok | | ok | | | | ok |
| Aroclor 1254 | ok | | | | | ok | ok | |
| Aroclor 1260 | ok | | ok | | | | | |
| Tetrachloro-m-xylene | ok | | | | | | | |
| Decachlorobiphenyl | ok | | | | | | | |
| Affected Samples: | | | | | | | | |
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PCB Calibration Summary - Page 2

Instrument: HP3327
 Column: RTX-35 / RTX-5

| | | | | | | | | |
|----------------------|---------------------|---------------|--|--|--|--|--|--|
| Date: | 2/18/98- 2/19/98 | 2/22/98 | | | | | | |
| Time: | | 0237 | | | | | | |
| | Initial Cal. | Cont. Cal. | | | | | | |
| | %RSD | %D | | | | | | |
| Aroclor 1016 | ok | | | | | | | |
| Aroclor 1221 | ok | | | | | | | |
| Aroclor 1232 | ok | | | | | | | |
| Aroclor 1242 | ok | | | | | | | |
| Aroclor 1248 | ok | | | | | | | |
| Aroclor 1254 | ok | | | | | | | |
| Aroclor 1260 | ok | ok | | | | | | |
| Tetrachloro-m-xylene | ok | | | | | | | |
| Decachlorobiphenyl | ok | | | | | | | |
| Affected Samples: | | | | | | | | |
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CORRECTED ANALYSIS SUMMARY FORMS

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40584

Lab Name: ITS Environmental

Lab Code: WCHVT

Contract: 91082

Case: PCB

SDG: FISH05

Phase Type: BIOTA

Lab Sample ID: 345983

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/18/97

Dilution Factor: 20.0

Date Analyzed: 02/21/98

% Solids: 100% ALK

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 1000 | R B |
| 11104-28-2 | Aroclor-1221 | 1000 | R B |
| 11141-16-5 | Aroclor-1232 | 1000 | R B |
| 53469-21-9 | Aroclor-1242 | 1000 | R B |
| 12672-29-6 | Aroclor-1248 | 12000 | B |
| 11097-69-1 | Aroclor-1254 | 4600 | B |
| 11096-82-5 | Aroclor-1260 | 740 | J |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40585

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH05

Phase Type: BIOTA

Lab Sample ID: 345984

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/18/97

Dilution Factor: 10.0

Date Analyzed: 02/21/98

% Solids: 100% ALKAL

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 500 | R B |
| 11104-28-2 | Aroclor-1221 | 500 | R B |
| 11141-16-5 | Aroclor-1232 | 500 | R B |
| 53469-21-9 | Aroclor-1242 | 500 | R B |
| 12672-29-6 | Aroclor-1248 | 3800 | H |
| 11097-69-1 | Aroclor-1254 | 3000 | H |
| 11096-82-5 | Aroclor-1260 | 370 | J |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40586

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH05

Phase Type: BIOTA

Lab Sample ID: 345985

Phase Weight: 10.1 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/18/97

Dilution Factor: 10.0

Date Analyzed: 02/21/98

% Solids: 100% *APR 1998*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 500 | R B |
| 11104-28-2 | Aroclor-1221 | 500 | R B |
| 11141-16-5 | Aroclor-1232 | 500 | U B |
| 53469-21-9 | Aroclor-1242 | 500 | U B |
| 12672-29-6 | Aroclor-1248 | 7800 | U H |
| 11097-69-1 | Aroclor-1254 | 3800 | U H |
| 11096-82-5 | Aroclor-1260 | 500 | U |

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**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40587

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH05

Phase Type: BIOTA

Lab Sample ID: 345986

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/18/97

Dilution Factor: 5.0

Date Analyzed: 02/21/98

% Solids: 200 *YPL* 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 250 | # 5 |
| 11104-28-2 | Aroclor-1221 | 250 | # 5 |
| 11141-16-5 | Aroclor-1232 | 250 | # 5 |
| 53469-21-9 | Aroclor-1242 | 250 | # 5 |
| 12672-29-6 | Aroclor-1248 | 2000 | # 5 |
| 11097-69-1 | Aroclor-1254 | 1900 | # 5 |
| 11096-82-5 | Aroclor-1260 | 250 | U |

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ITS Environmental 55 South Park Drive Colchester, Vermont 05446

Telephone (802) 655-1203

Fax (802) 655-1248

By *KPL*
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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40595

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH05

Phase Type: BIOTA

Lab Sample ID: 345987

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/18/97

Dilution Factor: 10.0

Date Analyzed: 02/21/98

% Solids: 100% 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 500 | # 5 |
| 11104-28-2 | Aroclor-1221 | 500 | # 5 |
| 11141-16-5 | Aroclor-1232 | 500 | # 5 |
| 53469-21-9 | Aroclor-1242 | 500 | # 5 |
| 12672-29-6 | Aroclor-1248 | 7500 | # 4 |
| 11097-69-1 | Aroclor-1254 | 5600 | # 4 |
| 11096-82-5 | Aroclor-1260 | 680 | # 4 |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40588

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH05

Phase Type: BIOTA

Lab Sample ID: 345988

Phase Weight: 10.1 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/18/97

Dilution Factor: 5.0

Date Analyzed: 02/21/98

% Solids: 100% 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 250 | H |
| 11104-28-2 | Aroclor-1221 | 250 | H |
| 11141-16-5 | Aroclor-1232 | 250 | H |
| 53469-21-9 | Aroclor-1242 | 580 | H |
| 12672-29-6 | Aroclor-1248 | 620 | H |
| 11097-69-1 | Aroclor-1254 | 1900 | H |
| 11096-82-5 | Aroclor-1260 | 250 | H |

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**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40589

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH05

Phase Type: BIOTA

Lab Sample ID: 345989

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/18/97

Dilution Factor: 2.0

Date Analyzed: 02/21/98

% Solids: 100 Kfc 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 100 | B |
| 11104-28-2 | Aroclor-1221 | 100 | B |
| 11141-16-5 | Aroclor-1232 | 100 | B |
| 53469-21-9 | Aroclor-1242 | 100 | B |
| 12672-29-6 | Aroclor-1248 | 1400 | B |
| 11097-69-1 | Aroclor-1254 | 860 | B |
| 11096-82-5 | Aroclor-1260 | 190 | B |

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**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40591

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH05

Phase Type: BIOTA

Lab Sample ID: 345991

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/18/97

Dilution Factor: 3.0

Date Analyzed: 02/21/98

% Solids: 100% 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 150 | # 5 |
| 11104-28-2 | Aroclor-1221 | 150 | # 5 |
| 11141-16-5 | Aroclor-1232 | 150 | # 5 |
| 53469-21-9 | Aroclor-1242 | 150 | # 5 |
| 12672-29-6 | Aroclor-1248 | 320 | # 4 |
| 11097-69-1 | Aroclor-1254 | 930 | # 4 |
| 11096-82-5 | Aroclor-1260 | 150 | # 5 |

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**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40592

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH05

Phase Type: BIOTA

Lab Sample ID: 345992

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/18/97

Dilution Factor: 2.0

Date Analyzed: 02/21/98

% Solids: 100% KPC ARK 199

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 100 | 4 5 |
| 11104-28-2 | Aroclor-1221 | 100 | 4 5 |
| 11141-16-5 | Aroclor-1232 | 100 | 4 5 |
| 53469-21-9 | Aroclor-1242 | 100 | 4 5 |
| 12672-29-6 | Aroclor-1248 | 500 | 4 5 |
| 11097-69-1 | Aroclor-1254 | 620 | 4 5 |
| 11096-82-5 | Aroclor-1260 | 100 | 4 5 |

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000082

**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40593

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH05

Phase Type: BIOTA

Lab Sample ID: 345993

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/18/97

Dilution Factor: 3.0

Date Analyzed: 02/21/98

% Solids: 100% 418K%

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 150 | # 55 |
| 11104-28-2 | Aroclor-1221 | 150 | # 55 |
| 11141-16-5 | Aroclor-1232 | 150 | # 55 |
| 53469-21-9 | Aroclor-1242 | 150 | # 55 |
| 12672-29-6 | Aroclor-1248 | 560 | # 44 |
| 11097-69-1 | Aroclor-1254 | 650 | # 44 |
| 11096-82-5 | Aroclor-1260 | 180 | # 44 |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40594

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH05

Phase Type: BIOTA

Lab Sample ID: 345994

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/18/97

Dilution Factor: 2.0

Date Analyzed: 02/21/98

% Solids: 100% *APR 18*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-------------------|
| 12674-11-2 | Aroclor-1016 | 100 | <i>u</i> <i>5</i> |
| 11104-28-2 | Aroclor-1221 | 100 | <i>u</i> <i>5</i> |
| 11141-16-5 | Aroclor-1232 | 100 | <i>u</i> <i>5</i> |
| 53469-21-9 | Aroclor-1242 | 100 | <i>u</i> <i>5</i> |
| 12672-29-6 | Aroclor-1248 | 650 | <i>u</i> <i>5</i> |
| 11097-69-1 | Aroclor-1254 | 640 | <i>u</i> <i>5</i> |
| 11096-82-5 | Aroclor-1260 | 100 | <i>u</i> <i>5</i> |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40505

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH06

Phase Type: BIOTA

Lab Sample ID: 345995

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/18/97

Dilution Factor: 20.0

Date Analyzed: 02/21/98

% Solids: 100 *KPC* 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 1000 | R |
| 11104-28-2 | Aroclor-1221 | 1000 | R |
| 11141-16-5 | Aroclor-1232 | 1000 | R |
| 53469-21-9 | Aroclor-1242 | 1000 | R |
| 12672-29-6 | Aroclor-1248 | 3300 | |
| 11097-69-1 | Aroclor-1254 | 6400 | |
| 11096-82-5 | Aroclor-1260 | 1400 | |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40596

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH05

Phase Type: BIOTA

Lab Sample ID: 345996

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/18/97

Dilution Factor: 1.0

Date Analyzed: 02/21/98

% Solids: 200 *plc* 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | R 5 |
| 11104-28-2 | Aroclor-1221 | 50 | U 5 |
| 11141-16-5 | Aroclor-1232 | 50 | R 5 |
| 53469-21-9 | Aroclor-1242 | 81 | U 5 |
| 12672-29-6 | Aroclor-1248 | 50 | R 5 |
| 11097-69-1 | Aroclor-1254 | 230 | U 5 |
| 11096-82-5 | Aroclor-1260 | 33 | J |

REVISED
APR 08 1998

By *KAC*

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40597

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH05

Phase Type: BIOTA

Lab Sample ID: 345997

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/18/97

Dilution Factor: 1.0

Date Analyzed: 02/21/98

% Solids: 100% 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | 8 5 |
| 11104-28-2 | Aroclor-1221 | 50 | 4 5 |
| 11141-16-5 | Aroclor-1232 | 50 | 4 5 |
| 53469-21-9 | Aroclor-1242 | 86 | 4 5 |
| 12672-29-6 | Aroclor-1248 | 50 | 4 5 |
| 11097-69-1 | Aroclor-1254 | 370 | 4 5 |
| 11096-82-5 | Aroclor-1260 | 43 | J |

REVISE
APR 08 1998

By: KPC

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40598

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH05

Phase Type: BIOTA

Lab Sample ID: 345998

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/18/97

Dilution Factor: 1.0

Date Analyzed: 02/21/98

% Solids: 200 *pk* 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | <i>pk</i> |
| 11104-28-2 | Aroclor-1221 | 50 | <i>pk</i> |
| 11141-16-6 | Aroclor-1232 | 50 | <i>pk</i> |
| 53469-21-9 | Aroclor-1242 | 50 | <i>pk</i> |
| 12672-29-6 | Aroclor-1248 | 50 | <i>pk</i> |
| 11097-69-1 | Aroclor-1254 | 90 | <i>pk</i> |
| 11096-82-5 | Aroclor-1260 | 50 | <i>pk</i> |

REVISE
APR 08 1998

By *pk*

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40599

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH05

Phase Type: BIOTA

Lab Sample ID: 345999

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/18/97

Dilution Factor: 1.0

Date Analyzed: 02/21/98

% Solids: 100% 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | R 5 |
| 11104-28-2 | Aroclor-1221 | 50 | U 5 |
| 11141-16-5 | Aroclor-1232 | 50 | R 5 |
| 53469-21-9 | Aroclor-1242 | 50 | U 5 |
| 12672-29-6 | Aroclor-1248 | 68 | U 5 |
| 11097-69-1 | Aroclor-1254 | 61 | U 5 |
| 11096-82-5 | Aroclor-1260 | 50 | R 5 |

REVISE
APR 08 1998

By PK

000145

FORM 1 AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40600

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH05

Phase Type: BIOTA

Lab Sample ID: 346000

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/18/97

Dilution Factor: 5.0

Date Analyzed: 02/22/98

% Solids: 100% 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 250 | # 5 |
| 11104-28-2 | Aroclor-1221 | 250 | # 5 |
| 11141-16-5 | Aroclor-1232 | 250 | # 5 |
| 53469-21-9 | Aroclor-1242 | 250 | # 5 |
| 12672-29-6 | Aroclor-1248 | 380 | # 4 |
| 11097-69-1 | Aroclor-1254 | 880 | # 4 |
| 11096-82-5 | Aroclor-1260 | 160 | J |

REVISED
APR 08 1998

By pk

000154

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40601

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH05

Phase Type: BIOTA

Lab Sample ID: 346001

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/18/97

Dilution Factor: 2.0

Date Analyzed: 02/22/98

% Solids: 100% 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 100 | # 5 |
| 11104-28-2 | Aroclor-1221 | 100 | # 5 |
| 11141-16-5 | Aroclor-1232 | 100 | # 5 |
| 53469-21-9 | Aroclor-1242 | 100 | # 5 |
| 12672-29-6 | Aroclor-1248 | 200 | # 5 |
| 11097-69-1 | Aroclor-1254 | 480 | # 5 |
| 11096-82-5 | Aroclor-1260 | 83 | J |

REVISIT
APR 08 1998

By KPC

000163

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40602

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH05

Phase Type: BIOTA

Lab Sample ID: 346002

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/18/97

Dilution Factor: 1.0

Date Analyzed: 02/22/98

% Solids: 100% KPC 4/18/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | # 5 |
| 11104-28-2 | Aroclor-1221 | 50 | # 5 |
| 11141-16-5 | Aroclor-1232 | 50 | # 5 |
| 53469-21-9 | Aroclor-1242 | 39 | J |
| 12672-29-6 | Aroclor-1248 | 89 | J |
| 11097-69-1 | Aroclor-1254 | 140 | J |
| 11096-82-5 | Aroclor-1260 | 50 | # 5 |

REVISE
APR 08 1998

By KPC
000172

PERCENT LIPID ANALYSES

Percent Lipids Results

| Sample ID | Lab ID | Matrix | Result |
|-----------|--------|--------|--------|
| K40584 | 345983 | tissue | 14.0% |
| K40585 | 345984 | tissue | 8.8% |
| K40586 | 345985 | tissue | 10.0% |
| K40587 | 345986 | tissue | 3.0% |
| K40595 | 345987 | tissue | 14.8% |
| K40588 | 345988 | tissue | 5.3% |
| K40589 | 345989 | tissue | 1.6% |
| K40591 | 345991 | tissue | 1.1% |
| K40592 | 345992 | tissue | 0.5% |
| K40593 | 345993 | tissue | 1.3% |
| K40594 | 345994 | tissue | 2.2% |
| K40505 | 345995 | tissue | 20.6% |
| K40596 | 345996 | tissue | 0.2% |
| K40597 | 345997 | tissue | 0.3% |
| K40598 | 345998 | tissue | 0.1% |
| K40599 | 345999 | tissue | 0.2% |
| K40600 | 346000 | tissue | 0.6% |
| K40601 | 346001 | tissue | 0.4% |
| K40602 | 346002 | tissue | 0.2% |
| | | | |
| | | | |
| | | | |

CHAIN OF CUSTODY

**6723 Towpath Road, P.O. Box 68
Syracuse, New York 13214-0068
TEL: (315) 448-9120**

CHAIN OF CUSTODY RECORD

[illegible]

**6723 Towpath Road, P.O. Box 66
Syracuse, New York 13214-0066
TEL: (315) 446-9120**

CHAIN OF CUSTODY RECORD

00005

[illegible]



6723 Towpath Road, P.O. Box 66
Syracuse, New York 13214-0066
TEL: (315) 446-9120

CHAIN OF CUSTODY RECORD

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| PROJ. NO. 6Y5.2Y.711 | | PROJECT NAME Kalamazoo River Resident Fish | | Whole Fish | | Composite | | PCBs (Aroclors) | | Tox Lipids | | REMARKS | |
|--|----------|---|---------------|---|--------------------------------|------------------------------|--------------|-----------------|------|------------------------------|--|---------|--|
| SAMPLERS: (Signature) <i>[Signature]</i> | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | | | | | | | | |
| KY0505 | 10/14/97 | 12:30 | | X | N. Richmond Adult Carp | | X | X | | | | | Fillet carp (skin-off fillets) and bass (skin-on, scales-on fillets) and analyze fillets following analytical procedures discussed previously. |
| KY0516 | | | | | Plainville Dam - Adult Bass | | | | | | | | |
| KY0597 | | | | | | | | | | | | | |
| KY0598 | | | | | | | | | | | | | |
| KY0599 | | | | | | | | | | | | | |
| KY0600 | | | | | | | | | | | | | |
| KY0601 | | | | | | | | | | | | | |
| KY0602 | | | | | | | | | | | | | |
| KY0603 | | | | | | | | | | | | | |
| KY0604 | | | | | | | | | | | | | |
| KY0605 | | | | | | | | | | | | | |
| KY0606 | | | | | | | | | | | | | |
| KY0607 | | | | | | | | | | | | | |
| KY0608-c | | | X | | Plainville Dam - Juvenile Bass | | | | | | | | Analyze whole-body composite as directed above |
| Relinquished by: (Signature) <i>[Signature]</i> | | DATE 10/24/97 | TIME 17:30 | Received by: (Signature) <i>[Signature]</i> | | Relinquished by: (Signature) | | DATE | TIME | Relinquished by: (Signature) | | | |
| Relinquished by: (Signature) | | DATE | TIME | Received by: (Signature) | | Relinquished by: (Signature) | | DATE | TIME | Relinquished by: (Signature) | | | |
| Relinquished by: (Signature) | | DATE | TIME | Received for Laboratory by: (Signature) <i>[Signature]</i> | | DATE 10-25-97 | TIME 1030 | Remarks: | | | | | |

DATA REVIEW FOR
ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER
SUPERFUND SITE

SDG# FISH06

PCB ANALYSES

BIOTA

Analyses performed by:

ITS Environmental, Inc.
Colchester, Vermont

Review performed by:



Blasland, Bouck & Lee, Inc.
Syracuse, New York

Summary

The following is an assessment of the PCB data package for SDG# FISH06 for the analysis of tissue from the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and sample results for PCB and Lipid analyses. Analyses were performed on the following samples:

| Sample ID | Lab ID | Matrix | Sampling Date | Analyses | | | | |
|-----------|--------|--------|---------------|----------|-----|-----|-----|--------|
| | | | | VOA | BNA | PCB | TAL | %LIPID |
| K40603 | 346026 | tissue | 10/14/97 | | | x | | x |
| K40604 | 346027 | tissue | 10/14/97 | | | x | | x |
| K40605 | 346028 | tissue | 10/14/97 | | | x | | x |
| K40606 | 346029 | tissue | 10/14/97 | | | x | | x |
| K40607 | 346030 | tissue | 10/14/97 | | | x | | x |
| K40608-C | 346031 | tissue | 10/14/97 | | | x | | x |
| K40609-C | 346032 | tissue | 10/23/97 | | | x | | x |
| K40610-C | 346033 | tissue | 10/23/97 | | | x | | x |
| K40611-C | 346034 | tissue | 10/23/97 | | | x | | x |
| K40612-C | 346035 | tissue | 10/23/97 | | | x | | x |
| K40582 | 346036 | tissue | 10/22/97 | | | x | | x |
| K40583 | 346037 | tissue | 10/22/97 | | | x | | x |
| K40534-C | 346040 | tissue | 10/17/97 | | | x | | x |
| EB | 346041 | tissue | | | | x | | x |
| K40613 | 346335 | tissue | 10/27/97 | | | x | | x |
| K40614 | 346336 | tissue | 10/27/97 | | | x | | x |
| K40615 | 346337 | tissue | 10/28/97 | | | x | | x |
| K40616 | 346338 | tissue | 10/28/97 | | | x | | x |
| K40617 | 346339 | tissue | 10/28/97 | | | x | | x |
| K40630-C | 346340 | tissue | 10/28/97 | | | x | | x |
| K40631-C | 346343 | tissue | 10/28/97 | | | x | | x |
| | | | | | | | | |

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by ITS Environmental, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which is less likely to be affected by interferences. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

Since the samples were held in frozen storage, no holding time from date of collection applies; however, a holding time of 40 days from extraction to analysis has been applied to all samples.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance blanks, i.e., method, field or rinse blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure contamination of samples during field operations.

No target compounds were detected in the method blanks. Field blanks are not applicable to biota sampling.

3. System Performance

The system performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The initial calibration was within this limit for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limit for all Aroclors.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recovery for both surrogates were below control limits in samples K40612-C and K40617. The data for these samples have been qualified as estimated based on the recoveries. All other surrogate recoveries were within control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

All Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

No matrix spike/matrix spike duplicate was included in this data set. No evaluation of matrix-specific performance could therefore be performed.

A matrix spike blank was extracted and analyzed with the samples. Since the matrix spike blank demonstrated acceptable recoveries, no action has been taken based on the lack of a matrix spike.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

DATA REVIEW CHECKLIST

PCB Data Review Checklist

| | YES | NO | NA |
|--|---------------|---------------|---------------|
| <u>Data Completeness and Deliverables</u> | | | |
| Is there a narrative or cover letter present? | <u>X</u> | <u> </u> | <u> </u> |
| Are the sample numbers included in the narrative? | <u>X</u> | <u> </u> | <u> </u> |
| Are the sample chain-of-custodies present? | <u>X</u> | <u> </u> | <u> </u> |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | <u> </u> | <u>X</u> | <u> </u> |
| <u>Holding Times</u> | | | |
| Have any holding times been exceeded? | <u> </u> | <u>X</u> | <u> </u> |
| <u>Surrogate Recovery</u> | | | |
| Are surrogate recovery forms present? | <u>X</u> | <u> </u> | <u> </u> |
| Are all the samples listed on the appropriate surrogate recovery form? | <u>X</u> | <u> </u> | <u> </u> |
| Were recoveries of TCX or DCB outside of specified limits for any sample or blank? | <u>X</u> | <u> </u> | <u> </u> |
| If yes, were the samples reanalyzed? | <u> </u> | <u>X</u> | <u> </u> |
| <u>Matrix Spikes</u> | | | |
| Is there a matrix spike recovery form present? | <u> </u> | <u>X</u> | <u> </u> |
| Were matrix spikes analyzed at the required frequency? | <u> </u> | <u>X</u> | <u> </u> |
| How many spike recoveries were outside of QC limits? | | | |
| <u>NA</u> out of <u>NA</u> | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| <u>NA</u> out of <u>NA</u> | | | |
| <u>Blanks</u> | | | |
| Is a Method Blank Summary Form present? | <u>X</u> | <u> </u> | <u> </u> |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | <u>X</u> | <u> </u> | <u> </u> |
| Do any method/reagent/instrument blanks have positive results? | <u> </u> | <u>X</u> | <u> </u> |
| Do any field/rinse blanks have positive results? | <u> </u> | <u> </u> | <u>X</u> |
| Are there field/rinse/equipment blanks associated with every sample? | <u> </u> | <u> </u> | <u>X</u> |

PCB Data Review Checklist - Page 2

| | YES | NO | NA |
|---|-------------------|-------------------|-------------------|
| <u>Calibration and GC Performance</u> | | | |
| Are the following chromatograms and data printouts present? | | | |
| Aroclor 1016/1260 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1221 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1232 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1242 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1248 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1254 | <u>X</u> | <u> </u> | <u> </u> |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence? | <u>X</u> | <u> </u> | <u> </u> |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | <u>X</u> | <u> </u> | <u> </u> |
| Have all samples been injected within a 12 hour period beginning with the injection of a calibration standard? | <u>X</u> | <u> </u> | <u> </u> |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed? | <u>X</u> | <u> </u> | <u> </u> |
| Are %D values for all compounds within limits (less than 15%)? | <u>X</u> | <u> </u> | <u> </u> |
| <u>Analytical Sequence Check</u> | | | |
| Is a analytical sequence form present and complete for each column and each period of analyses? | <u>X</u> | <u> </u> | <u> </u> |
| Was the proper analytical sequence followed? | <u>X</u> | <u> </u> | <u> </u> |
| <u>Cleanup Efficiency Verification</u> | | | |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | <u> </u> | <u> </u> | <u>X</u> |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | <u>X</u> | <u> </u> | <u> </u> |
| <u>PCB Identification</u> | | | |
| Is both a combined and single column Aroclor Identification Report present for every sample? | <u>X</u> | <u> </u> | <u> </u> |
| Do the combined column and individual column Aroclor identifications agree? | <u>X</u> | <u> </u> | <u> </u> |
| Were there any false negatives? | <u> </u> | <u>X</u> | <u> </u> |

PCB Data Review Checklist - Page 3

| | YES | NO | NA |
|--|-------------------|-------------------|-------------------|
| Was GC/MS confirmation provided when required? | <u> </u> | <u> </u> | <u> X </u> |
| <u>Compound Quantitation and Reported Detection Limits</u> | | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | <u> X </u> | <u> </u> | <u> </u> |
| <u>Chromatogram Quality</u> | | | |
| Were the baselines stable? | <u> X </u> | <u> </u> | <u> </u> |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | <u> </u> | <u> X </u> | <u> </u> |
| <u>Field Duplicates</u> | | | |
| Were field duplicates submitted with the samples? | <u> </u> | <u> </u> | <u> X </u> |

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding Time | Surrogates | |
|-----------|--------------|------------|-----|
| | | TCX | DCB |
| K40603 | | | |
| K40604 | | | |
| K40605 | | | |
| K40606 | | | |
| K40607 | | | |
| K40608-C | | | |
| K40609-C | | | |
| K40610-C | | | |
| K40611-C | | | |
| K40612-C | | 1 | 1 |
| K40582 | | | |
| K40583 | | | |
| K40534-C | | | |
| EB | | | |
| K40613 | | | |
| K40614 | | | |
| K40615 | | | |
| K40616 | | | |
| K40617 | | 1 | 1 |
| K40630-C | | | |
| K40631-C | | | |
| | | | |
| | | | |

Surrogate Standards
 TCX Tetrachloro-m-xylene
 DCB Decachlorobiphenyl

Qualifiers:
 D Surrogates diluted out
 1 Recovery high
 1 Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: HP3327
 Column: RTX-35 / RTX-5

| Date: | 1/28/98- 1/29/98 | 1/29/98 | 1/29/98 | 1/30 | 1/30 | 1/30 | 1/30 | 1/30 |
|----------------------|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | | 2156 | 2223 | 0349 | 0416 | 0942 | 1009 | 1646 |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | %D | %D | %D | %D | %D | %D | %D |
| Aroclor 1016 | ok | | | | | | | |
| Aroclor 1221 | ok | | | | | | | |
| Aroclor 1232 | ok | | | | | | | |
| Aroclor 1242 | ok | | | | ok | | | |
| Aroclor 1248 | ok | ok | | ok | | | | ok |
| Aroclor 1254 | ok | | | | | ok | ok | |
| Aroclor 1260 | ok | | ok | | | | | |
| Tetrachloro-m-xylene | ok | | | | | | | |
| Decachlorobiphenyl | ok | | | | | | | |
| Affected Samples: | | | | | | | | |
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PCB Calibration Summary - Page 2

Instrument: HP3327
 Column: RTX-35 / RTX-5

| Date: | 1/28/98- 1/29/98 | 1/30/98 | | | | | | |
|----------------------|---------------------|---------------|--|--|--|--|--|--|
| Time: | | 1714 | | | | | | |
| | Initial Cal. | Cont. Cal. | | | | | | |
| | %RSD | %D | | | | | | |
| Aroclor 1016 | ok | | | | | | | |
| Aroclor 1221 | ok | | | | | | | |
| Aroclor 1232 | ok | | | | | | | |
| Aroclor 1242 | ok | | | | | | | |
| Aroclor 1248 | ok | | | | | | | |
| Aroclor 1254 | ok | | | | | | | |
| Aroclor 1260 | ok | ok | | | | | | |
| Tetrachloro-m-xylene | ok | | | | | | | |
| Decachlorobiphenyl | ok | | | | | | | |
| Affected Samples: | | | | | | | | |
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CORRECTED ANALYSIS SUMMARY FORMS

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40603

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH006

Phase Type: BIOTA

Lab Sample ID: 346026

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 2.0

Date Analyzed: 01/29/98

% Solids: 100 *LR* 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 100 | U |
| 11104-28-2 | Aroclor-1221 | 100 | U |
| 11141-16-5 | Aroclor-1232 | 100 | U |
| 53469-21-9 | Aroclor-1242 | 100 | U |
| 12672-29-6 | Aroclor-1248 | 100 | U |
| 11097-69-1 | Aroclor-1254 | 300 | |
| 11096-82-5 | Aroclor-1260 | 57 | J |

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By *LR*

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40607

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH006

Phase Type: BIOTA

Lab Sample ID: 346030

Phase Weight: 10.1 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 2.0

Date Analyzed: 01/30/98

% Solids: 100% *418/98*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 99 | U |
| 11104-28-2 | Aroclor-1221 | 99 | U |
| 11141-16-5 | Aroclor-1232 | 99 | U |
| 53469-21-9 | Aroclor-1242 | 99 | U |
| 12672-29-6 | Aroclor-1248 | 99 | U |
| 11097-69-1 | Aroclor-1254 | 420 | |
| 11096-82-5 | Aroclor-1260 | 66 | J |

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By *KPC*

000040

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40608-C

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH06

Phase Type: BIOTA

Lab Sample ID: 346031

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 5.0

Date Analyzed: 01/30/98

% Solids: 100% 3/18/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 250 | U |
| 11104-28-2 | Aroclor-1221 | 250 | U |
| 11141-16-5 | Aroclor-1232 | 250 | U |
| 53469-21-9 | Aroclor-1242 | 250 | U |
| 12672-29-6 | Aroclor-1248 | 1600 | |
| 11097-69-1 | Aroclor-1254 | 960 | |
| 11096-82-5 | Aroclor-1260 | 180 | J |

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000049

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40609-C

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH06

Phase Type: BIOTA

Lab Sample ID: 346032

Phase Weight: 10.1 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 5.0

Date Analyzed: 01/30/98

% Solids: 100% *AK* 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 250 | U |
| 11104-28-2 | Aroclor-1221 | 250 | U |
| 11141-16-5 | Aroclor-1232 | 250 | U |
| 53469-21-9 | Aroclor-1242 | 250 | U |
| 12672-29-6 | Aroclor-1248 | 1700 | |
| 11097-69-1 | Aroclor-1254 | 1300 | |
| 11096-82-5 | Aroclor-1260 | 230 | J |

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By *AK*

FORM 1
 AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40610-C

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH06

Phase Type: BIOTA

Lab Sample ID: 346033

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 5.0

Date Analyzed: 01/30/98

% Solids: 100% MS198

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 250 | U |
| 11104-28-2 | Aroclor-1221 | 250 | U |
| 11141-16-5 | Aroclor-1232 | 250 | U |
| 53469-21-9 | Aroclor-1242 | 250 | U |
| 12672-29-6 | Aroclor-1248 | 1700 | |
| 11097-69-1 | Aroclor-1254 | 1300 | |
| 11096-82-5 | Aroclor-1260 | 220 | J |

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By kle

000067

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40611-C

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH06

Phase Type: BIOTA

Lab Sample ID: 346034

Phase Weight: 10.0 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 3.0

Date Analyzed: 01/30/98

% Solids: 100% APR 1998

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 150 | U |
| 11104-28-2 | Aroclor-1221 | 150 | U |
| 11141-16-5 | Aroclor-1232 | 150 | U |
| 53469-21-9 | Aroclor-1242 | 150 | U |
| 12672-29-6 | Aroclor-1248 | 1100 | |
| 11097-69-1 | Aroclor-1254 | 1100 | |
| 11096-82-5 | Aroclor-1260 | 180 | |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40612-C

Lab Name: ITS Environmental
Contract: 91082

Lab Code: INCHVT
Case: PCB

SDG: FISH06

Phase Type: BIOTA
Phase Weight: 10.1 (g)
Injection Volume: 1.0 (uL)
Dilution Factor: 3.0
% Solids: 100% 418KX

Lab Sample ID: 346035
Date Received: 10/25/97
Date Extracted: 12/29/97
Date Analyzed: 01/30/98
Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 150 | 8 5 |
| 11104-28-2 | Aroclor-1221 | 150 | 8 5 |
| 11141-16-5 | Aroclor-1232 | 150 | 8 5 |
| 53469-21-9 | Aroclor-1242 | 150 | 8 5 |
| 12672-29-6 | Aroclor-1248 | 570 | 4 5 |
| 11097-69-1 | Aroclor-1254 | 500 | 4 5 |
| 11096-82-5 | Aroclor-1260 | 84 | J |

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By llc

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40534-C

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH06

Phase Type: BIOTA

Lab Sample ID: 346040

Phase Weight: 10.1 (g)

Date Received: 10/25/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 3.0

Date Analyzed: 01/30/98

% Solids: 100% *APC 4/8/98*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 150 | U |
| 11104-28-2 | Aroclor-1221 | 150 | U |
| 11141-16-5 | Aroclor-1232 | 150 | U |
| 53469-21-9 | Aroclor-1242 | 150 | U |
| 12672-29-6 | Aroclor-1248 | 900 | |
| 11097-69-1 | Aroclor-1254 | 680 | |
| 11096-82-5 | Aroclor-1260 | 200 | |

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By *KPC*

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40613

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH06

Phase Type: BIOTA

Lab Sample ID: 346335

Phase Weight: 10.0 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 1.0

Date Analyzed: 01/30/98

% Solids: 100% *ALL* *2/8/98*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 100 | |
| 11097-69-1 | Aroclor-1254 | 90 | |
| 11096-82-5 | Aroclor-1260 | 29 | J |

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By *Kee*

000133

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40614

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH06

Phase Type: BIOTA

Lab Sample ID: 346336

Phase Weight: 10.1 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 1.0

Date Analyzed: 01/30/98

% Solids: 100% *LR 4/8/98*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 46 | J |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 150 | |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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By *LR*

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40615

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH06

Phase Type: BIOTA

Lab Sample ID: 346337

Phase Weight: 10.1 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 1.0

Date Analyzed: 01/30/98

% Solids: 100% *100% 4/8/98*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 34 | J |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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000153

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40617

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH06

Phase Type: BIOTA

Lab Sample ID: 346339

Phase Weight: 10.0 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 1.0

Date Analyzed: 01/30/98

% Solids: 100 *llc* 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|--------------|
| 12674-11-2 | Aroclor-1016 | 50 | R <i>llc</i> |
| 11104-28-2 | Aroclor-1221 | 50 | R <i>llc</i> |
| 11141-16-5 | Aroclor-1232 | 50 | R <i>llc</i> |
| 53469-21-9 | Aroclor-1242 | 50 | R <i>llc</i> |
| 12672-29-6 | Aroclor-1248 | 50 | R <i>llc</i> |
| 11097-69-1 | Aroclor-1254 | 40 | R <i>llc</i> |
| 11096-82-5 | Aroclor-1260 | 50 | R <i>llc</i> |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40630-C

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH06

Phase Type: BIOTA

Lab Sample ID: 346340

Phase Weight: 10.0 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 1.0

Date Analyzed: 01/30/98

% Solids: 100% 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 130 | |
| 11096-82-5 | Aroclor-1260 | 39 | J |

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000172

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40631-C

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH06

Phase Type: BIOTA

Lab Sample ID: 346343

Phase Weight: 10.0 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 1.0

Date Analyzed: 01/30/98

% Solids: 100 *llc* A1818

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 230 | |
| 11096-82-5 | Aroclor-1260 | 43 | J |

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By *llc*

000182

PERCENT LIPID ANALYSES



8723 Towpath Road, P.O. Box 66
Syracuse, New York 13214-0066
TEL: (315) 448-9120

CHAIN OF CUSTODY RECORD

| PROJ. NO. | | PROJECT NAME | | | | | Whole Fish | Number of Containers | P.B. (Ales) | P. Lipids | | | | | | REMARKS | | | | | | | |
|---|----------|-------------------------------|-------|------|--|------|---|----------------------|-------------|-----------|--|------------------------------|--|------|--|---|------|------|------------------------------|--|--|--|--|
| 64524711 | | Kalamazoo River Resident Fish | | | | | | | | | | | | | | | | | | | | | |
| SAMPLERS: (Signature) <i>Kel D. Sten</i> | | | | | | | | | | | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | | | | | | | | | | | | | | | | | | |
| K 40504-C2 | 10/14/97 | 14:00 | X | | New Richmond AUSA #11 Juvenile Sm Bass | 1 | X | X | | | | | | | | Combine K40504-C2 with K40504-C1 (provided earlier) | | | | | | | |
| K 40530-C | | | | | | | | | | | | | | | | Process all Juvenile bass composite samples as whole-body composites and analyze following analytical procedures discussed previously. | | | | | | | |
| K 40531-C | | | | | | | | | | | | | | | | | | | | | | | |
| K 40532-C | | | | | | | | | | | | | | | | | | | | | | | |
| K 40533-C | 10/17/97 | 10:00 | X | | Lake Michigan AUSA #9 Juvenile Sm Bass | | | | | | | | | | | | | | | | | | |
| K 40534-C1 | " | " | " | | " | | | | | | | | | | | * 40534 Action C-1 to combine with 40534 C-2 which will fillet | | | | | | | |
| K 40535 | 10/17/97 | 10:00 | | X | Lake Michigan AUSA #9 Adult Carp | 1 | X | X | | | | | | | | Fillet carp (skin-off fillets) and bass (skin-on scales-on fillets) and analyze fillets following analytical procedures discussed previously. | | | | | | | |
| K40536 | | | | | | | | | | | | | | | | | | | | | | | |
| K40537 | | | | | | | | | | | | | | | | | | | | | | | |
| K40538 | | | | | | | | | | | | | | | | | | | | | | | |
| K40539 | | | | | | | | | | | | | | | | | | | | | | | |
| K40540 | | | | | Lake Michigan AUSA #9 Adult Bass | | | | | | | | | | | | | | | | | | |
| K40541 | | | | | | | | | | | | | | | | | | | | | | | |
| K40542 | | | | | | | | | | | | | | | | | | | | | | | |
| Relinquished by: (Signature) <i>Kel D. Sten</i> | | | | | DATE | TIME | Received by: (Signature) | | | | | Relinquished by: (Signature) | | | | | DATE | TIME | Relinquished by: (Signature) | | | | |
| Relinquished by: (Signature) | | | | | DATE | TIME | Received by: (Signature) | | | | | Relinquished by: (Signature) | | | | | DATE | TIME | Relinquished by: (Signature) | | | | |
| Relinquished by: (Signature) | | | | | DATE | TIME | Received for Laboratory by: (Signature) <i>Madison Miller</i> | | | | | DATE | | TIME | | Remarks: COPY - ORIGINAL ON FILE SDG # <i>FISA03</i> ETR # <i>67077</i> | | | | | | | |

CHAIN OF CUSTODY RECORD

000005

| PROJ. NO. 64517.711 | | PROJECT NAME Kalamazoo River Resident Fish | | | | Whole Fish | | PCBs (Analytes) | | 7. Lipids | | REMARKS | |
|--|----------|---|---------------|---|--------------------------------|------------------------------|--------------|---|------|------------------------------|--|---------|--|
| SAMPLERS: (Signature) <i>[Signature]</i> | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | | | | | | | | |
| K40505 | 10/11/97 | 12:15 | | X | N. Richmond Adult Carp | X | X | | | | | | Fillet carp (skin-off fillets) and bass (skin-on, scales-on fillets) and analyze fillets following analytical procedures discussed previously. |
| K40516 | | | | | Plainville Dam - Adult Bass | | | | | | | | |
| K40597 | | | | | | | | | | | | | |
| K40598 | | | | | | | | | | | | | |
| K40599 | | | | | | | | | | | | | |
| K40600 | | | | | | | | | | | | | |
| K40601 | | | | | | | | | | | | | |
| K40602 | | | | | | | | | | | | | |
| K40603 | | | | | | | | | | | | | |
| K40604 | | | | | | | | | | | | | |
| K40605 | | | | | | | | | | | | | |
| K40606 | | | | | | | | | | | | | |
| K40607 | | | | | | | | | | | | | |
| K40608-c | | | X | | Plainville Dam - Juvenile Bass | | | | | | | | Analyze whole-body composite as directed above |
| Relinquished by: (Signature) <i>[Signature]</i> | | DATE 10/24/97 | TIME 17:30 | Received by: (Signature) <i>[Signature]</i> | | Relinquished by: (Signature) | | DATE | TIME | Relinquished by: (Signature) | | | |
| Relinquished by: (Signature) | | DATE | TIME | Received by: (Signature) | | Relinquished by: (Signature) | | DATE | TIME | Relinquished by: (Signature) | | | |
| Relinquished by: (Signature) | | DATE | TIME | Received for Laboratory by: (Signature) <i>[Signature]</i> | | DATE 10-25-97 | TIME 1030 | Remarks: COPY - ORIGINAL ON FILE SDG # FISHOS ETR # 67161 | | | | | |



6723 Towpath Road, P.O. Box 66
Syracuse, New York 13214-0066
TEL: (315) 446-9120

CHAIN OF CUSTODY RECORD

| | | | | | | | | | | | | | | | | | | | |
|---|----------|--|------------------|---------------|--|---|--|------------------------------|--|--|------|----------|------------------------------|--|--|---------|--|--|--|
| PROJ. NO. 61524711 | | PROJECT NAME Halamazoo River NRMP Resident Fish | | | | <div>Whole Fish</div> <div>PCBs (Aroclor)</div> <div>B lipids</div> | | | | | | | | | | REMARKS | | | |
| SAMPLERS: (Signature) <i>Karl Stene</i> | | | | | | | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | | | | | | | | | | | | | | |
| K 40649-C | 10/23/97 | 13:00 | X | | Plainville Dam - Juvenile Bass | | | | | Analyze whole-body composite sample following analytical procedures discussed previously | | | | | | | | | |
| K 40650-C | | | X | | ↓ | | | | | | | | | | | | | | |
| K 40651-C | | | X | | | | | | | | | | | | | | | | |
| K 40652-C | | | X | | | | | | | | | | | | | | | | |
| K 40552 | 10/24/97 | 12:00 | | X | Lake Allegan - Adult Bass | | | | | Fillet bass (skin-on, scales-on fillets) and analyze fillets as directed above | | | | | | | | | |
| K 40553 | " | " | | X | " " | | | | | | | | | | | | | | |
| K 40534-C | " | " | X | | Lake Allegan - Juvenile Bass | | | | | Combine with sample 40534-C1 and analyze whole-body composite sample as directed above | | | | | | | | | |
| Relinquished by: (Signature) <i>Karl Stene</i> | | | DATE 10/24/97 | TIME 15:50 | Received by: (Signature) <i>Tim Banta</i> | | | Relinquished by: (Signature) | | | DATE | TIME | Relinquished by: (Signature) | | | | | | |
| Relinquished by: (Signature) | | | DATE | TIME | Received by: (Signature) | | | Relinquished by: (Signature) | | | DATE | TIME | Relinquished by: (Signature) | | | | | | |
| Relinquished by: (Signature) | | | DATE | TIME | Received for Laboratory by: (Signature) | | | DATE | | TIME | | Remarks: | | | | | | | |
| | | | | | | | | 10-25-97 | | 1030 | | | | | | | | | |



BLASLAND & BOUCK
ENGINEERS, P.C.

2000007

CHAIN OF CUSTODY RECORD

| PROJ. NO. | | PROJECT NAME | | | | NO. OF CONTAINERS | Whole Fish PBs (Aqueous) or Lipids | | | | | | REMARKS |
|-----------------------|-------|--------------|------|------|-----------------------------|-------------------|--|---|--|--|--|--|--|
| SAMPLERS: (Signature) | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP | GRAB | STATION LOCATION | | | | | | | | |
| K4524711 | 10/27 | 14:00 | | X | slow backward Adult Tr Bass | 1 | X | X | | | | | Fillet (skin-on, scales-on fillet) and analyze fillets following analytical procedures discussed previously. |
| K4524711 | " | " | | " | " | 1 | X | X | | | | | |
| K4524711 | 10/28 | 9:00 | | X | random Pond Adult Sm Bass | 1 | X | X | | | | | |
| K4524711 | ↓ | ↓ | | ↓ | ↓ | ↓ | ↓ | ↓ | | | | | ↓ |
| K4524711 | 10/28 | 14:00 | 1 | | Battle Creek Juvenile Bass | 1 | X | X | | | | | analyze whole-body fillet samples following analytical procedures discussed previously. |
| K4524711 | " | " | 2 | | " | 1 | X | X | | | | | |
| K4524711 | 10/28 | 14:00 | 1 | | Battle Creek Juvenile Bass | 1 | X | X | | | | | |
| K4524711 | 10/28 | 17:00 | ↓ | | ↓ | ↓ | ↓ | ↓ | | | | | ↓ |
| K4524711 | 10/27 | 11:00 | X | X | Battle Creek Adult Bass | 1 | X | X | | | | | Fillet (skin-on, scales-off) and analyze fillets following analytical procedures discussed previously. |
| K4524711 | ↓ | ↓ | | ↓ | ↓ | ↓ | ↓ | ↓ | | | | | |
| K4524711 | ↓ | ↓ | | ↓ | ↓ | ↓ | ↓ | ↓ | | | | | |

| | | | | | |
|------------------------------|----------------|---|------------------------------|-------------|--------------------------|
| Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
| K4524711 | 10/28/97 17:00 | | | | |
| Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
| | | | | | |
| Relinquished by: (Signature) | Date / Time | Received for Laboratory by: (Signature) | Date / Time | Remarks | |
| | | | 10/28/97 0930 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

Percent Lipids Results

| Sample ID | Lab ID | Matrix | Result |
|-----------|--------|--------|--------|
| K40603 | 346026 | tissue | 0.1% |
| K40605 | 346028 | tissue | 0.3% |
| K40606 | 346029 | tissue | 0.3% |
| K40607 | 346030 | tissue | 0.2% |
| K40608-C | 346031 | tissue | 2.0% |
| K40609-C | 346032 | tissue | 1.6% |
| K40610-C | 346033 | tissue | 1.9% |
| K40611-C | 346034 | tissue | 1.7% |
| K40612-C | 346035 | tissue | 1.7% |
| K40582 | 346036 | tissue | 0.2% |
| K40583 | 346037 | tissue | 0.2% |
| K40534-C | 346040 | tissue | 1.6% |
| EB | 346041 | tissue | 0.9% |
| K40613 | 346335 | tissue | 0.3% |
| K40614 | 346336 | tissue | 0.2% |
| K40615 | 346337 | tissue | 0.3% |
| K40617 | 346339 | tissue | 1.2% |
| K40630-C | 346340 | tissue | 1.2% |
| K40631-C | 346343 | tissue | 2.1% |
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CHAIN OF CUSTODY

DATA REVIEW FOR
ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER
SUPERFUND SITE

SDG# FISH07

PCB ANALYSES

BIOTA

Analyses performed by:

ITS Environmental, Inc.
Colchester, Vermont

Review performed by:

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Blasland, Bouck & Lee, Inc.
Syracuse, New York

Summary

The following is an assessment of the PCB data package for SDG# FISH07 for the analysis of tissue from the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and sample results for PCB and Lipid analyses. Analyses were performed on the following samples:

| Sample ID | Lab ID | Matrix | Sampling Date | Analyses | | | | |
|-----------|--------|--------|---------------|----------|-----|-----|-----|--------|
| | | | | VOA | BNA | PCB | TAL | %LIPID |
| K40632-C | 346344 | tissue | 10/29/97 | | | x | | x |
| K40633-C | 346345 | tissue | 10/29/97 | | | x | | x |
| K40634-C | 346346 | tissue | 10/29/97 | | | x | | x |
| K40635 | 346347 | tissue | 10/29/97 | | | x | | x |
| K40636 | 346348 | tissue | 10/29/97 | | | x | | x |
| K40637 | 346349 | tissue | 10/29/97 | | | x | | x |
| K40368 | 346350 | tissue | 10/29/97 | | | x | | x |
| K40639 | 346351 | tissue | 10/29/97 | | | x | | x |
| K40623 | 346357 | tissue | 10/28/97 | | | x | | x |
| K40624 | 346358 | tissue | 10/28/97 | | | x | | x |
| K40625 | 346359 | tissue | 10/28/97 | | | x | | x |
| K40626 | 346360 | tissue | 10/28/97 | | | x | | x |
| K40627 | 346361 | tissue | 10/28/97 | | | x | | x |
| K40628 | 346362 | tissue | 10/28/97 | | | x | | x |
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PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by ITS Environmental, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which is less likely to be affected by interferences. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

Since the samples were held in frozen storage, no holding time from date of collection applies; however, a holding time of 40 days from extraction to analysis has been applied to all samples.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance blanks, i.e., method, field or rinse blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure contamination of samples during field operations.

No target compounds were detected in the method blanks. Field blanks are not applicable to biota sampling.

3. System Performance

The system performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The initial calibration was within this limit for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limit for all Aroclors.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

All surrogate recoveries were within control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

All Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

No matrix spike/matrix spike duplicate was included in this data set. No evaluation of matrix-specific performance could therefore be performed.

A matrix spike blank was extracted and analyzed with the samples. Since the matrix spike blank demonstrated acceptable recoveries, no action has been taken based on the lack of a matrix spike.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

DATA REVIEW CHECKLIST

PCB Data Review Checklist

| | YES | NO | NA |
|--|----------------------------|---------------|---------------|
| <u>Data Completeness and Deliverables</u> | | | |
| Is there a narrative or cover letter present? | <u>X</u> | <u> </u> | <u> </u> |
| Are the sample numbers included in the narrative? | <u>X</u> | <u> </u> | <u> </u> |
| Are the sample chain-of-custodies present? | <u>X</u> | <u> </u> | <u> </u> |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | <u> </u> | <u>X</u> | <u> </u> |
| <u>Holding Times</u> | | | |
| Have any holding times been exceeded? | <u> </u> | <u>X</u> | <u> </u> |
| <u>Surrogate Recovery</u> | | | |
| Are surrogate recovery forms present? | <u>X</u> | <u> </u> | <u> </u> |
| Are all the samples listed on the appropriate surrogate recovery form? | <u>X</u> | <u> </u> | <u> </u> |
| Were recoveries of TCX or DCB outside of specified limits for any sample or blank? | <u> </u> | <u>X</u> | <u> </u> |
| If yes, were the samples reanalyzed? | <u> </u> | <u> </u> | <u>X</u> |
| <u>Matrix Spikes</u> | | | |
| Is there a matrix spike recovery form present? | <u> </u> | <u>X</u> | <u> </u> |
| Were matrix spikes analyzed at the required frequency? | <u> </u> | <u>X</u> | <u> </u> |
| How many spike recoveries were outside of QC limits? | <u>NA</u> out of <u>NA</u> | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | <u>NA</u> out of <u>NA</u> | | |
| <u>Blanks</u> | | | |
| Is a Method Blank Summary Form present? | <u>X</u> | <u> </u> | <u> </u> |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | <u>X</u> | <u> </u> | <u> </u> |
| Do any method/reagent/instrument blanks have positive results? | <u> </u> | <u>X</u> | <u> </u> |
| Do any field/rinse blanks have positive results? | <u> </u> | <u> </u> | <u>X</u> |
| Are there field/rinse/equipment blanks associated with every sample? | <u> </u> | <u> </u> | <u>X</u> |

PCB Data Review Checklist - Page 2

| | YES | NO | NA |
|---|-------------------|-------------------|-------------------|
| <u>Calibration and GC Performance</u> | | | |
| Are the following chromatograms and data printouts present? | | | |
| Aroclor 1016/1260 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1221 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1232 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1242 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1248 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1254 | <u>X</u> | <u> </u> | <u> </u> |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence? | <u>X</u> | <u> </u> | <u> </u> |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | <u>X</u> | <u> </u> | <u> </u> |
| Have all samples been injected within a 12 hour period beginning with the injection of a calibration standard? | <u>X</u> | <u> </u> | <u> </u> |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed? | <u>X</u> | <u> </u> | <u> </u> |
| Are %D values for all compounds within limits (less than 15%)? | <u>X</u> | <u> </u> | <u> </u> |
| <u>Analytical Sequence Check</u> | | | |
| Is a analytical sequence form present and complete for each column and each period of analyses? | <u>X</u> | <u> </u> | <u> </u> |
| Was the proper analytical sequence followed? | <u>X</u> | <u> </u> | <u> </u> |
| <u>Cleanup Efficiency Verification</u> | | | |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | <u> </u> | <u> </u> | <u>X</u> |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | <u>X</u> | <u> </u> | <u> </u> |
| <u>PCB Identification</u> | | | |
| Is both a combined and single column Aroclor Identification Report present for every sample? | <u>X</u> | <u> </u> | <u> </u> |
| Do the combined column and individual column Aroclor identifications agree? | <u>X</u> | <u> </u> | <u> </u> |
| Were there any false negatives? | <u> </u> | <u>X</u> | <u> </u> |

PCB Data Review Checklist - Page 3

| | YES | NO | NA |
|--|--------------|--------------|--------------|
| Was GC/MS confirmation provided when required? | _____ | _____ | <u> X </u> |
| <u>Compound Quantitation and Reported Detection Limits</u> | | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | <u> X </u> | _____ | _____ |
| <u>Chromatogram Quality</u> | | | |
| Were the baselines stable? | <u> X </u> | _____ | _____ |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | _____ | <u> X </u> | _____ |
| <u>Field Duplicates</u> | | | |
| Were field duplicates submitted with the samples? | _____ | _____ | <u> X </u> |

1

[illegible]

Surrogate Standards

| | |
|-----|----------------------|
| TCX | Tetrachloro-m-xylene |
| DCB | Decachlorobiphenyl |

Qualifiers:

| | |
|---|------------------------|
| D | Surrogates diluted out |
| 1 | Recovery high |
| 1 | Recovery low |

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: HP3327
 Column: RTX-35 / RTX-5

| Date: | 2/18/98- 2/19/98 | 2/19/98 | 2/19/98 | 2/20 | 2/20 | 2/20 | 2/20 | 2/23 |
|----------------------|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | | 1957 | 2023 | 0141 | 0207 | 0725 | 0751 | 1202 |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | %D | %D | %D | %D | %D | %D | %D |
| Aroclor 1016 | ok | | | | | | | |
| Aroclor 1221 | ok | | | | | | | |
| Aroclor 1232 | ok | | | | | | | |
| Aroclor 1242 | ok | | | | | | ok | |
| Aroclor 1248 | ok | ok | | ok | | ok | | ok |
| Aroclor 1254 | ok | | ok | | | | | |
| Aroclor 1260 | ok | | | | ok | | | |
| Tetrachloro-m-xylene | ok | | | | | | | |
| Decachlorobiphenyl | ok | | | | | | | |
| Affected Samples: | | | | | | | | |
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PCB Calibration Summary - Page 2

Instrument: HP3327
 Column: RTX-35 / RTX-5

| Date: | | 2/23/98 | 2/23/98 | 2/23 | | | | |
|----------------------|--------------|------------|------------|------------|------------|------------|------------|------------|
| Time: | | 1229 | 1745 | 1812 | | | | |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | %D | %D | %D | %D | %D | %D | %D |
| Aroclor 1016 | | | | | | | | |
| Aroclor 1221 | | | | | | | | |
| Aroclor 1232 | | | | | | | | |
| Aroclor 1242 | | | | | | | | |
| Aroclor 1248 | | | ok | | | | | |
| Aroclor 1254 | | ok | | | | | | |
| Aroclor 1260 | | | | ok | | | | |
| Tetrachloro-m-xylene | | | | | | | | |
| Decachlorobiphenyl | | | | | | | | |
| Affected Samples: | | | | | | | | |
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CORRECTED ANALYSIS SUMMARY FORMS

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40632-C1

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH07

Phase Type: BIOTA

Lab Sample ID: 346344

Phase Weight: 10.05 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/03/98

Dilution Factor: 1.0

Date Analyzed: 02/19/98

% Solids: 100 *KPC* 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 260 | |
| 11096-82-5 | Aroclor-1260 | 67 | |

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By *KPC*

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40633-C1

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH07

Phase Type: BIOTA

Lab Sample ID: 346345

Phase Weight: 10.09 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/03/98

Dilution Factor: 1.0

Date Analyzed: 02/20/98

% Solids: 100% 4/15/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 210 | |
| 11096-82-5 | Aroclor-1260 | 45 | J |

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By

000019

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40634-C1

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH07

Phase Type: BIOTA

Lab Sample ID: 346346

Phase Weight: 10.01 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/03/98

Dilution Factor: 1.0

Date Analyzed: 02/20/98

% Solids: 100 *KRC* 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 160 | |
| 11096-82-5 | Aroclor-1260 | 38 | J |

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By *KRC*

000028

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40635

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH07

Phase Type: BIOTA

Lab Sample ID: 346347

Phase Weight: 10.07 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/03/98

Dilution Factor: 1.0

Date Analyzed: 02/20/98

% Solids: 100 KR 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 75 | |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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By KRC

000037

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40636

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH07

Phase Type: BIOTA

Lab Sample ID: 346348

Phase Weight: 10.10 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/03/98

Dilution Factor: 1.0

Date Analyzed: 02/20/98

% Solids: 100 *llc* 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 46 | J |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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By *llc*
000046

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40637

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH07

Phase Type: BIOTA

Lab Sample ID: 346349

Phase Weight: 10.08 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/03/98

Dilution Factor: 1.0

Date Analyzed: 02/20/98

% Solids: 100% *AK* 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 52 | |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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By *AK*

000055

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40638

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH07

Phase Type: BIOTA

Lab Sample ID: 346350

Phase Weight: 10.10 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/03/98

Dilution Factor: 1.0

Date Analyzed: 02/20/98

% Solids: 100% 4/1/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 27 | J |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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By kle

nm064

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40639

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH07

Phase Type: BIOTA

Lab Sample ID: 346351

Phase Weight: 10.08 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/03/98

Dilution Factor: 1.0

Date Analyzed: 02/20/98

% Solids: 100% 4K198

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 50 | U |
| 11096-82-5 | Aroclor-1260 | 43 | J |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40623

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH07

Phase Type: BIOTA

Lab Sample ID: 346357

Phase Weight: 10.1 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/03/98

Dilution Factor: 1.0

Date Analyzed: 02/23/98

% Solids: 100% *418K8*

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 48 | J |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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FORM 1
AROCLOL ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40624

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH07

Phase Type: BIOTA

Lab Sample ID: 346358

Phase Weight: 10.09 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/03/98

Dilution Factor: 1.0

Date Analyzed: 02/23/98

% Solids: 100 ~~100~~ ^{4/12/98}

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 80 | |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40625

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH07

Phase Type: BIOTA

Lab Sample ID: 346359

Phase Weight: 10.01 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/03/98

Dilution Factor: 1.0

Date Analyzed: 02/23/98

% Solids: 100% 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 50 | U |
| 11096-82-5 | Aroclor-1260 | 27 | J |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40626

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH07

Phase Type: BIOTA

Lab Sample ID: 346360

Phase Weight: 10.07 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/03/98

Dilution Factor: 1.0

Date Analyzed: 02/23/98

% Solids: 100 *ck* 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 50 | U |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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By *ck*
000109

FORM 1
AROCLOL ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40627

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH07

Phase Type: BIOTA

Lab Sample ID: 346361

Phase Weight: 10.10 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/03/98

Dilution Factor: 1.0

Date Analyzed: 02/23/98

% Solids: 100% 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 37 | J |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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By klk 000118

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40628

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH07

Phase Type: BIOTA

Lab Sample ID: 346362

Phase Weight: 10.02 (g)

Date Received: 10/30/97

Injection Volume: 1.0 (uL)

Date Extracted: 02/03/98

Dilution Factor: 1.0

Date Analyzed: 02/23/98

% Solids: 100 KLC 4/8/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 56 | |
| 11096-82-5 | Aroclor-1260 | 50 | U |

DEWIS
APR 08 1998

By KLC

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000127

PERCENT LIPID ANALYSES

Percent Lipids Results

[illegible]

CHAIN OF CUSTODY

CHAIN OF CUSTODY RECORD

| PROJ. NO. | | PROJECT NAME | | | | NO. OF CONTAINERS | ANALYSIS TYPE | | | | | | REMARKS | |
|------------------------------|-------|------------------------------------|-------|---|----------------------------|------------------------------|---------------|----------------|-----------|--------------------------|--|--|---|--|
| 64524711 | | Kalamazoo River NRMP Resident Fish | | | | | Whole Fish | POPs (Aroclor) | OB lipids | | | | | |
| SAMPLERS: (Signature) | | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | | | | | | | | | |
| K40613 | 10/27 | 14:00 | | X | New Richmond Adult Sm Bass | 1 | X | X | | | | | Fillet (Skin-on, scales-on fillets) and | |
| K40614 | " | " | | " | " | 1 | 1 | 1 | | | | | analyze fillets following analytical | |
| K40615 | 10/28 | 9:00 | | X | Moscow Pond Adult Sm Bass | 1 | 1 | 1 | | | | | procedures discussed previously. | |
| K40616 | ↓ | ↓ | | ↓ | ↓ | ↓ | ↓ | ↓ | | | | | ↓ | |
| K40617 | ↓ | ↓ | | ↓ | ↓ | ↓ | ↓ | ↓ | | | | | ↓ | |
| K40630-C | 10/28 | 14:00 | X | | Bottle Creek Juvenile Bass | 1 | X | X | | | | | analyze whole-body fillet samples | |
| K40631-C1 | " | " | X | | " | " | X | X | | | | | following analytical procedures | |
| K40631-C2 | 10/29 | 11:00 | X | | Bottle Creek: Juv. Bass | 1 | X | X | | | | | discussed previously. | |
| K40632-C1 | 10/29 | ↓ | | ↓ | ↓ | ↓ | ↓ | ↓ | | | | | ↓ | |
| K40632-C2 | 10/29 | ↓ | | ↓ | ↓ | ↓ | ↓ | ↓ | | | | | ↓ | |
| K40634-C1 | 10/29 | ↓ | | ↓ | ↓ | ↓ | ↓ | ↓ | | | | | ↓ | |
| K40635 | 10/29 | 12:00 | X | X | Bottle Creek: Adult Bass | 1 | X | X | | | | | Fillet (Skin-on, scales-off) and | |
| K40636 | ↓ | ↓ | | ↓ | ↓ | ↓ | ↓ | ↓ | | | | | analyze fillets following analytical | |
| K40637 | ↓ | ↓ | | ↓ | ↓ | ↓ | ↓ | ↓ | | | | | procedures discussed previously | |
| Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | | | |
| K40637 | | 10/29/97 17:00 | | | | | | | | | | | | |
| Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | | | |
| | | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | Date / Time | | Received for Laboratory by: (Signature) | | Date / Time | | Remarks | | | | | | |
| | | | | | | 10/31/97 0930 | | | | | | | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files



BLASLAND & BOUCK
ENGINEERS, P.C.

000005

CHAIN OF CUSTODY RECORD

| PROJ. NO. | | PROJECT NAME | | | | NO. OF CON- TAINERS | REMARKS | | | | | |
|------------------------------|-------|------------------------------------|-----|---|-------------------------|------------------------------|---------|-------------|--|--------------------------|--|--------------------------------------|
| 64524711 | | Kalamazoo River NRMP Resident Fish | | | | | | | | | | |
| SAMPLER(S) (Signature) | | | | | | | REMARKS | | | | | |
| STA. NO. | DATE | TIME | CON | GRAB | STATION LOCATION | | | | | | | |
| K40618 | 11/28 | 14:00 | | X | Battle Creek Adult Bass | 1 | X | X | | | | Filled (skin-on, scales-on) and |
| K40619 | | | | | | | | | | | | analyze fillets following analytical |
| K40620 | | | | | | | | | | | | procedures discussed previously. |
| K40621 | | | | | | | | | | | | |
| K40622 | | | | | | | | | | | | |
| K40623 | | | | | | | | | | | | |
| K40624 | | | | | | | | | | | | |
| K40625 | | | | | | | | | | | | |
| K40626 | | | | | | | | | | | | |
| K40627 | | | | | | | | | | | | |
| K40628 | | | | | | | | | | | | |
| K40629 | | | | | | | | | | | | |
| Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | |
| K40629 | | 11/29/97 14:50 | | | | | | | | | | |
| Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | |
| | | | | | | | | | | | | |
| Relinquished by: (Signature) | | Date / Time | | Received for Laboratory by: (Signature) | | Date / Time | | Remarks | | | | |
| | | | | [Signature] | | 11/29/97 0930 | | | | | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field File



30000

[illegible]

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

DATA REVIEW FOR
ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER
SUPERFUND SITE

SDG# FISH08

PCB ANALYSES

BIOTA

Analyses performed by:

ITS Environmental, Inc.
Colchester, Vermont

Review performed by:



Blasland, Bouck & Lee, Inc.
Syracuse, New York

Summary

The following is an assessment of the PCB data package for SDG# FISH08 for the analysis of tissue from the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and sample results for PCB and Lipid analyses. Analyses were performed on the following samples:

[illegible]

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by ITS Environmental, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferences. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

Since the samples were held in frozen storage, no holding time from date of collection applies; however, a holding time of 40 days from extraction to analysis has been applied to all samples.

All samples were analyzed within the specified holding time.

2. Blank Contamination

Quality assurance blanks, i.e., method, field or rinse blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure contamination of samples during field operations.

No target compounds were detected in the method blanks. Field blanks are not applicable to biota sampling.

3. System Performance

The system performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The initial calibration was within this limit for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limit for all Aroclors.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recovery for one surrogate was below control limits in samples K40640, K440641, K40643 and K40645. Since recoveries for the remaining surrogate were within control limits, no data has been qualified based on the deviations. All other surrogate recoveries were within control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

All Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

No matrix spike/matrix spike duplicate was included in this data set. No evaluation of matrix-specific performance could therefore be performed.

A matrix spike blank was extracted and analyzed with the samples. Since the matrix spike blank demonstrated acceptable recoveries, no action has been taken based on the lack of a matrix spike.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

DATA REVIEW CHECKLIST

PCB Data Review Checklist

| | YES | NO | NA |
|--|---------------|---------------|---------------|
| <u>Data Completeness and Deliverables</u> | | | |
| Is there a narrative or cover letter present? | <u>X</u> | <u> </u> | <u> </u> |
| Are the sample numbers included in the narrative? | <u>X</u> | <u> </u> | <u> </u> |
| Are the sample chain-of-custodies present? | <u>X</u> | <u> </u> | <u> </u> |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | <u> </u> | <u>X</u> | <u> </u> |
| <u>Holding Times</u> | | | |
| Have any holding times been exceeded? | <u> </u> | <u>X</u> | <u> </u> |
| <u>Surrogate Recovery</u> | | | |
| Are surrogate recovery forms present? | <u>X</u> | <u> </u> | <u> </u> |
| Are all the samples listed on the appropriate surrogate recovery form? | <u>X</u> | <u> </u> | <u> </u> |
| Were recoveries of TCX or DCB outside of specified limits for any sample or blank? | <u>X</u> | <u> </u> | <u> </u> |
| If yes, were the samples reanalyzed? | <u> </u> | <u>X</u> | <u> </u> |
| <u>Matrix Spikes</u> | | | |
| Is there a matrix spike recovery form present? | <u> </u> | <u>X</u> | <u> </u> |
| Were matrix spikes analyzed at the required frequency? | <u> </u> | <u>X</u> | <u> </u> |
| How many spike recoveries were outside of QC limits? | | | |
| <u>NA</u> out of <u>NA</u> | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| <u>NA</u> out of <u>NA</u> | | | |
| <u>Blanks</u> | | | |
| Is a Method Blank Summary Form present? | <u>X</u> | <u> </u> | <u> </u> |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | <u>X</u> | <u> </u> | <u> </u> |
| Do any method/reagent/instrument blanks have positive results? | <u> </u> | <u>X</u> | <u> </u> |
| Do any field/rinse blanks have positive results? | <u> </u> | <u> </u> | <u>X</u> |
| Are there field/rinse/equipment blanks associated with every sample? | <u> </u> | <u> </u> | <u>X</u> |

PCB Data Review Checklist - Page 2

| | YES | NO | NA |
|---|---------------|---------------|---------------|
| <u>Calibration and GC Performance</u> | | | |
| Are the following chromatograms and data printouts present? | | | |
| Aroclor 1016/1260 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1221 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1232 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1242 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1248 | <u>X</u> | <u> </u> | <u> </u> |
| Aroclor 1254 | <u>X</u> | <u> </u> | <u> </u> |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence? | <u>X</u> | <u> </u> | <u> </u> |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | <u>X</u> | <u> </u> | <u> </u> |
| Have all samples been injected within a 12 hour period beginning with the injection of a calibration standard? | <u>X</u> | <u> </u> | <u> </u> |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed? | <u>X</u> | <u> </u> | <u> </u> |
| Are %D values for all compounds within limits (less than 15%)? | <u>X</u> | <u> </u> | <u> </u> |
| <u>Analytical Sequence Check</u> | | | |
| Is a analytical sequence form present and complete for each column and each period of analyses? | <u>X</u> | <u> </u> | <u> </u> |
| Was the proper analytical sequence followed? | <u>X</u> | <u> </u> | <u> </u> |
| <u>Cleanup Efficiency Verification</u> | | | |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | <u> </u> | <u> </u> | <u>X</u> |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | <u>X</u> | <u> </u> | <u> </u> |
| <u>PCB Identification</u> | | | |
| Is both a combined and single column Aroclor Identification Report present for every sample? | <u>X</u> | <u> </u> | <u> </u> |
| Do the combined column and individual column Aroclor identifications agree? | <u>X</u> | <u> </u> | <u> </u> |
| Were there any false negatives? | <u> </u> | <u>X</u> | <u> </u> |

PCB Data Review Checklist - Page 3

| | YES | NO | NA |
|--|--------------|--------------|--------------|
| Was GC/MS confirmation provided when required? | _____ | _____ | <u> X </u> |
| <u>Compound Quantitation and Reported Detection Limits</u> | | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | <u> X </u> | _____ | _____ |
| <u>Chromatogram Quality</u> | | | |
| Were the baselines stable? | <u> X </u> | _____ | _____ |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | _____ | <u> X </u> | _____ |
| <u>Field Duplicates</u> | | | |
| Were field duplicates submitted with the samples? | _____ | _____ | <u> X </u> |

PCB Holding Time and Surrogate Recovery Summary

[illegible]

Surrogate Standards
TCX Tetrachloro-m-xylene
DCB Decachlorobiphenyl

Qualifiers:
D Surrogates diluted out
r Recovery high
l Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: HP3327
Column: RTX-35 / RTX-5

[illegible]

CORRECTED ANALYSIS SUMMARY FORMS

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40640

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH08

Phase Type: BIOTA

Lab Sample ID: 347199

Phase Weight: 10.1 (g)

Date Received: 11/11/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 1.0

Date Analyzed: 01/30/98

% Solids: 200 *Y/L* 417148

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 46 | J |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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APR 07 1998

By *hlc*

000008

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40641

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH08

Phase Type: BIOTA

Lab Sample ID: 347200

Phase Weight: 10.0 (g)

Date Received: 11/11/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 1.0

Date Analyzed: 01/30/98

% Solids: 100% Δ 1798

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-6 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 58 | |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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000018

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40643

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH08

Phase Type: BIOTA

Lab Sample ID: 347202

Phase Weight: 10.1 (g)

Date Received: 11/11/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 1.0

Date Analyzed: 01/30/98

% Solids: 100% 4/1/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 73 | |
| 11096-82-5 | Aroclor-1260 | 30 | J |

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APR 07 1998

By lpc

000027

**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40644

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH08

Phase Type: BIOTA

Lab Sample ID: 347203

Phase Weight: 10.1 (g)

Date Received: 11/11/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 1.0

Date Analyzed: 01/30/98

% Solids: 100% 4-1-98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 60 | |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40645

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH08

Phase Type: BIOTA

Lab Sample ID: 347204

Phase Weight: 10.1 (g)

Date Received: 11/11/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 1.0

Date Analyzed: 01/30/98

% Solids: 100 KPC 47KPC

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 39 | J |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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000047

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40646

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH08

Phase Type: BIOTA

Lab Sample ID: 347205

Phase Weight: 10.0 (g)

Date Received: 11/11/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 1.0

Date Analyzed: 01/30/98

% Solids: 100% 4/17/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 73 | |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40647

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH08

Phase Type: BIOTA

Lab Sample ID: 347206

Phase Weight: 10.1 (g)

Date Received: 11/11/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 1.0

Date Analyzed: 01/30/98

% Solids: 100% 4/7/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 94 | |
| 11096-82-5 | Aroclor-1260 | 29 | J |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40648

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH08

Phase Type: BIOTA

Lab Sample ID: 347207

Phase Weight: 10.0 (g)

Date Received: 11/11/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 1.0

Date Analyzed: 01/30/98

% Solids: 100% 47%K

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 79 | |
| 11096-82-5 | Aroclor-1260 | 37 | J |

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By

KPC

ITS Environmental 55 South Park Drive Colchester, Vermont 05446

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Fax (802) 655-1248

000076

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40649

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH08

Phase Type: BIOTA

Lab Sample ID: 347208

Phase Weight: 10.0 (g)

Date Received: 11/11/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 1.0

Date Analyzed: 01/30/98

% Solids: 100% 4/1/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 35 | J |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40650

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH08

Phase Type: BIOTA

Lab Sample ID: 347209

Phase Weight: 10.1 (g)

Date Received: 11/11/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 1.0

Date Analyzed: 01/31/98

% Solids: 100% 4/7/98

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 200 | |
| 11096-82-5 | Aroclor-1260 | 66 | |

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APR 07 1998

By llc

000095

**FORM 1
AROCOR ANALYSIS DATA SHEET**

EPA SAMPLE NO.

K40651

Lab Name: ITS Environmental

Lab Code: INCHVT

Contract: 91082

Case: PCB

SDG: FISH08

Phase Type: BIOTA

Lab Sample ID: 347210

Phase Weight: 10.0 (g)

Date Received: 11/11/97

Injection Volume: 1.0 (uL)

Date Extracted: 12/29/97

Dilution Factor: 1.0

Date Analyzed: 01/31/98

% Solids: 100% Kfe
411148

Sulfur Clean-up: Y (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 47 | J |
| 11096-82-5 | Aroclor-1260 | 50 | U |

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APR 07 1998

By Kfe

000105

PERCENT LIPID ANALYSES

Percent Lipids Results

[illegible]

CHAIN OF CUSTODY

CHAIN OF CUSTODY RECORD

| PROJ. NO. | | PROJECT NAME | | NO. OF CONTAINERS | | Whole Fish | | PCBs (Ancho) | | % Lipids | | REMARKS | |
|------------------------------|----------|--------------|----------------|-------------------|---|------------|---|------------------------------|--|-------------|--|--------------------------|---|
| SAMPLERS: (Signature) | | | | | | | | | | | | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | | | | | | | | |
| K40640 | 11/10/97 | 14:00 | | X | Ceresco Res - Carp | 1 | X | X | | | | | Fillet (skin-off fillets) and analyze fillets following analytical procedures discussed previously. |
| K40641 | | | | | | | | | | | | | |
| K40642 | | | | | | | | | | | | | |
| K40643 | | | | | | | | | | | | | |
| K40644 | | | | | | | | | | | | | |
| K40645 | | | | | | | | | | | | | |
| K40646 | | | | | | | | | | | | | |
| K40647 | | | | | | | | | | | | | |
| K40648 | | | | | | | | | | | | | |
| K40649 | | | | | | | | | | | | | |
| K40650 | | | | | | | | | | | | | |
| K40651 | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | | Date / Time | | Received by: (Signature) | | | Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | |
| K40640 | | | 11/10/97 18:00 | | | | | | | | | | |
| Relinquished by: (Signature) | | | Date / Time | | Received by: (Signature) | | | Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | |
| | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | | Date / Time | | Received for Laboratory by: (Signature) | | | Date / Time | | Remarks | | | |
| | | | | | K40640 | | | 11/10/97 09:45 | | | | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files